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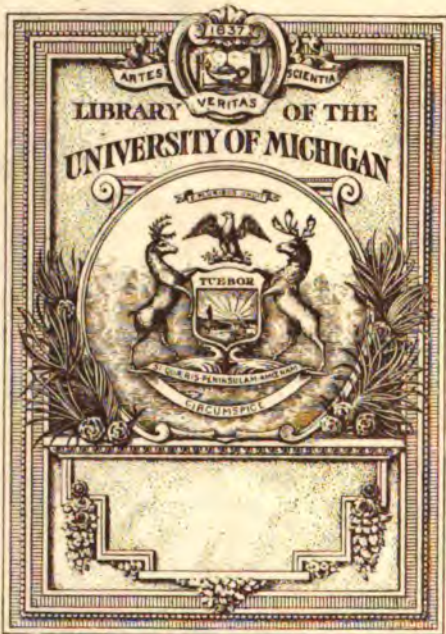
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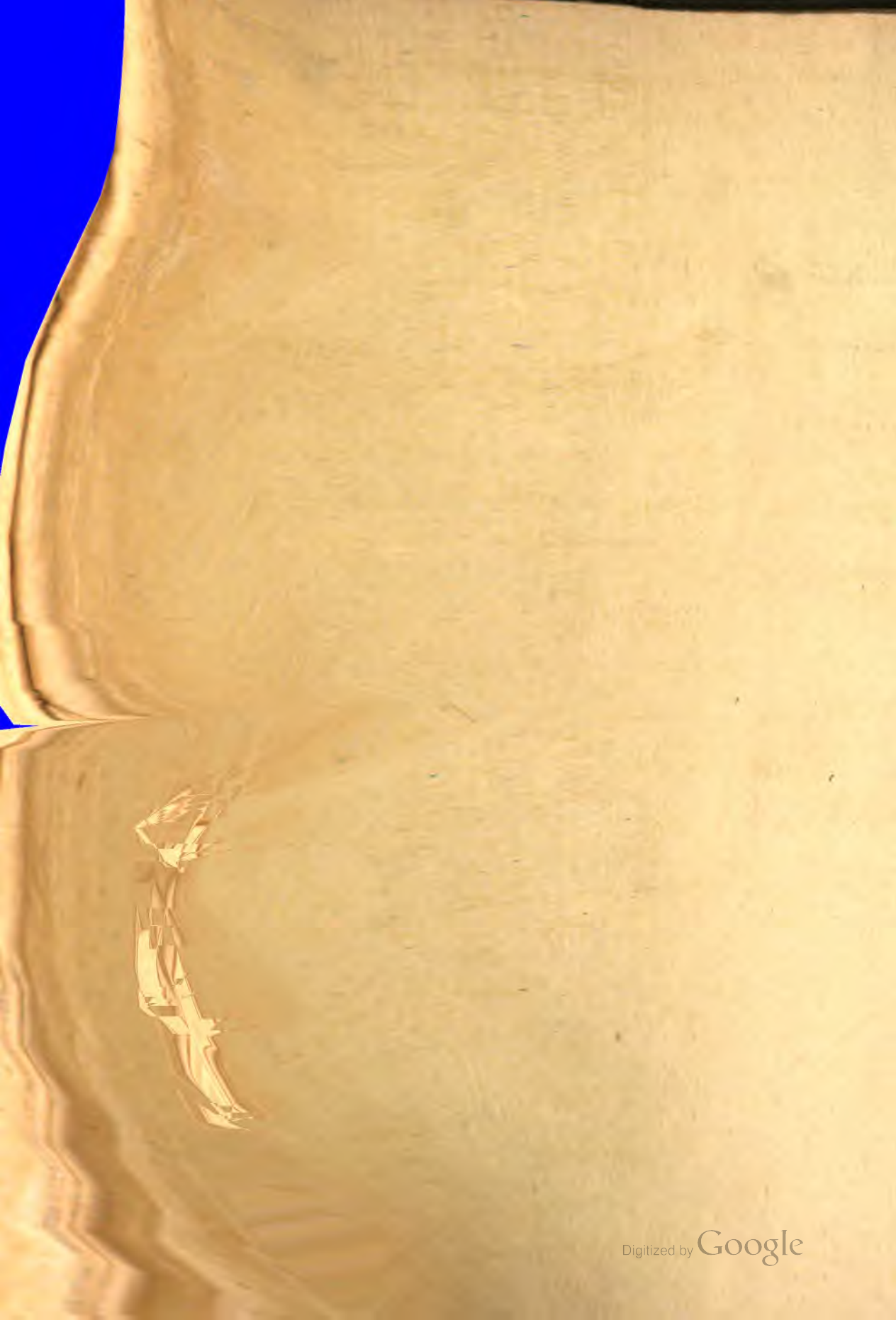
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# THE ARGHIVES OF DIAGNOSIS

A QUARTERLY JOURNAL DEVOTED TO THE STUDY  
AND THE PROGRESS OF DIAGNOSIS AND PROGNOSIS

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# THE ARCHIVES OF DIAGNOSIS

A QUARTERLY JOURNAL DEVOTED TO THE STUDY  
AND THE PROGRESS OF DIAGNOSIS AND PROGNOSIS

Vol. IV

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JANUARY, 1911

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## *Special Articles*

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### FACTORS INFLUENCING MORTALITY IN APPENDICITIS FROM A MEDICAL VIEWPOINT

By JAMES M. ANDERS

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There is no serious disease to which man is liable that presents greater difficulties than appendicitis on attempting to estimate the elements of danger. It is freely admitted by all writers upon the subject that an unexpected and unfavorable development may occur at any moment in the course of appendicitis without warning. Thus, a sudden rupture of an inflamed or a necrotic appendix with resulting generalized peritonitis of a virulent form may quickly carry the unfortunate patient beyond the hope of recovery. It is on account of our inability, diagnostically speaking, to determine when such fatal extensions are about to take place, that many surgeons and physicians have insisted upon the importance to the patients of operative intervention in all cases of appendicitis as soon as the disease is diagnosed. Again, it has been claimed by no lesser authorities than Osler and Dieulafoy that there is no medical treatment for this disease.

Granting that surgical methods of treatment, if carried out at the earliest possible moment, give a lower mortality rate than medical treatment alone, the trend of professional opinion during the

past few years has been favorable to according to medical treatment respectful consideration in selected cases of this disease. For example, we find Ochsner advocating delay in operation in some cases of appendicitis with spreading infection, although holding that all cases are finally operable, while Deaver is also contending at present writing, that not all cases of appendicitis, unless they be seen quite early, should be operated on immediately.

I feel strongly that the main factor influencing the prognosis from a medical viewpoint, however, is the tendency to postpone operative intervention in cases in which it is indicated until the proper moment has passed.

Perhaps, one of the greatest among the sins of omission on the part of medical practitioners is that of temporizing with cases of appendicitis that should already have been transferred to the surgeon. In order that the danger from this all too common shortcoming—to characterize it by no harsher term—shall be minimized, I would urge that the physician who is called to a case of well-characterized appendicitis at once request the services of a competent surgeon. It seems to me that the physician who pursues a “waiting policy” falls short of his duty, not only toward the patient but also toward the surgeon on whom he must often rely for the removal of the source of danger.

From the moment that appendicitis is diagnosed or, even strongly suspected in dubious cases or those presenting unusual abnormalities, physician and surgeon should be on watch together in order that the proper time for operative intervention shall not be allowed to pass unheeded and the patient's chances for recovery greatly diminished, if not wholly removed. The tendency to allow cases of appendicitis to drag on until an unfavorable extension of the appendicular inflammation has occurred before seeking the advice of the surgeon, is, in my opinion, common enough among practitioners to make it, as before stated, the dominant factor influencing the mortality rate of this disease. If I were asked to point the way to future developments looking to the lowering of the death rate of appendicitis, I would suggest closer relations between physician and surgeon.

Another factor modifying the outlook from the physician's point of view is insufficient rest for the bowel during an attack of

appendicitis. It seems to be well understood that absolute rest in the recumbent posture is of paramount importance to the sufferer from this disease. Rest for the intestinal tract, which is equally important, however, was not one of the objects of treatment in the past, but rather active catharsis with salines that disturbs the bowel by stimulating peristalsis. Happily, the majority of progressive physicians and surgeons, at present writing, strongly advocate the importance of bringing about an arrest of intestinal peristalsis in this disease. This can be accomplished by abstinence from food for a variable period of time according to the peculiarities of the individual case, by quiet of body and an ice-bag applied locally; it should not be effected by means of the use of opium or any of its derivatives, since these mask the local phenomena, hence are decidedly misleading on the one hand, and greatly disturb convalescence by interfering with the peristaltic waves, following operative procedures, on the other hand.

It may, however, be found necessary at times to resort to small doses of morphine in order to allay an intense abdominal pain in certain cases of appendicitis, employing just sufficient to moderate the patient's acute sufferings. It may, therefore, be conservatively stated that both active purgation with salines and the affording of rest to the bowel by huge doses of opium or morphine are factors that decidedly and unfavorably modify the outlook.

Mention should be made here of a general tendency toward deferring operation between attacks, and after primary attacks, in which there are sequelæ of one form or other, since the prognosis as to general health must under these conditions be decidedly unfavorable unless the appendix is removed. My position in regard to this question is, that the general practitioner in hesitating to subject these patients to operation, deprives them of advantages to which they are justly entitled. On the other hand, to operate routinely after primary attacks, which have eventuated in recovery, is without justification in the present state of our knowledge. For example, the death rate of interval operations is one to two per cent.—not a negligible consideration. Again, relapses following primary attacks, while quite common, probably do not exceed 25 per cent. of all cases. I am aware of the fact that purely surgical statistics show a higher percentage of relapses. The principal reason why the marked dis-

crepancy between medical and surgical figures exists, is that many cases do not come under the observation of the surgeon during the primary attack, which may be extremely mild. In this connection, it should be pointed out that in selected cases, relapses are preventable by avoiding digestive disorders, traumatism and the like.

Antecedent and associated conditions may decidedly influence the issue in cases of appendicitis. Among these, the more significant are, obesity, well-marked arteriosclerosis, chronic nephritis and diabetes, organic valvular disease, alcoholism and certain acute inflammatory conditions. Moreover, certain complications add to the gravity of the situation, more particularly pylephlebitis, hepatic abscess, pleuritis and the like.

Taking up now the different types of acute appendicitis with a view to analyzing their medical features as related to prognosis, I find it most convenient to subdivide the cases into two large classes: (a) those in which the morbid process remains practically limited to the appendix, and (b) those in which the process spreads to surrounding structures, more particularly the peritoneum. In so-called simple catarrhal appendicitis, the lesions are confined principally to the mucosa of the appendix. It is true that in many cases the entire thickness of the wall of the appendix is implicated, but the process displays little if any tendency to spreading. There is nothing in this form of appendicitis that affects unfavorably the prognosis, hence they oftentimes do not fall under the observation of the surgeon; but, I have observed in common with other clinicians, that a recurrence after a mild attack may manifest the characteristics of class (b), or those involving the surrounding structures with a serious aspect in some of the cases, at least. Hence, of the acute form, to which this discussion is limited, the majority of cases whose symptoms tend to influence prognosis may be considered under a single heading or those in which the process manifests a tendency to spreading. Not a few belonging to this category will be looked upon by the profession as non-operative cases or, at all events, as not being suitable for operative intervention on sight, while in a small percentage of cases of appendicitis, operation is declined.

The present view of physicians is opposed to any special prognostic significance of the temperature-record, and in this opinion, I fully concur. Appendicitis of the most malignant type may be en-

tirely latent so far as the temperature, pulse, pain and other characteristic features are concerned, and this is more commonly true of the temperature than the other factors just enumerated. When there is present a considerable elevation of temperature with signs of a large local abscess, however, unfavorable developments are almost certain to occur, unless an operation be speedily performed. I cannot, however, agree with those writers who affirm that the local changes in the tumor and the fever usually run parallel, since the temperature often fails to keep pace with the virulence of the invading organisms, and, therefore, with the rapidity of the development of the suppurative process.

In this connection, it is to be emphasized that severe pain, tenderness and rigidity in the region of the appendix are a group of features which may be looked upon as indicating the existence of appendicitis, and not mere appendicular colic, as many writers contend. In such instances widespread gangrene and necrosis may be present to be suddenly followed by a perforative peritonitis with its urgent symptoms.

The pulse is also of slight though greater importance than the fever-curve, as a prognostic factor. It is apt to become abnormally rapid and more or less tense in the presence of peritoneal involvement, although this is not constant. While increased rapidity of the pulse may be met in many cases, it is not to be regarded as being typical of the pathological changes present, more particularly while the process remains localized. When perforation is impending, I have observed hypertension of the pulse, and after this untoward event occurs, the pulse-rate, as a rule, rapidly increases.

Again, the temperature of collapse is observed to be attended with great rapidity of pulse-rate—an association of features portending danger. On the other hand, a more or less high temperature and pulse-rate may both quickly return to the normal in cases in which perforation of an exudate takes place, e.g. into the bowel—a favorable turn.

A rapidly progressive leukocytosis indicates suppuration and, as a general rule, is ominous unless an operation be promptly undertaken. Unfortunately, there may be an absence of leukocytosis, or leukopenia even may be present in the “most severe fulminating forms of appendicitis” indicative of lack of resistance, on account



of which fact it has been discredited as a criterion of either acute suppuration or gangrene.

The general condition of the patient must be carefully studied to facilitate the differential diagnosis between the milder and severer forms of the disease. In any case, sepsis is provocative of a grave condition without prompt surgical intervention. So long as the bodily state is good, the morbid process is localized in most cases. But though the prognostic significance of a favorable general condition is considerable, yet it must be admitted that the widest personal experience, the greatest care in examination and the possession of the greatest diagnostic acumen when applied to the special case, cannot determine whether it will remain so until full recovery is reached, or will suddenly assume a more or less alarming phase.

Absence of definite resistance or tumor is not to be looked upon as a particularly favorable prognostic sign, since these features are often absent at the beginning of a given case, only to put in an appearance a little later.

It is to be recollected that in cases that are treated medically, recovery is in many cases neither complete nor lasting, recurrences being common—in 20 to 25 per cent. The majority of relapses take place within a year, and after the second year they rarely occur, so that now the prospect of continued good health, so far as appendicitis is concerned, is quite good. The relapsing cases are on the whole less prone to perforate than primary ones. Again, recurrences following severe initial cases are generally of a lighter grade than the primary attacks. On the other hand, in light primary attacks, the relapse, should it occur, is likely to be more threatening to life.

It has been stated by competent authority that for private practice, the mortality-rate in all forms of appendicitis collectively considered, probably does not exceed five per cent., and that this equals the best results heretofore obtained by removal of the appendix during the attack. Whilst this fact may be doubted with good show of reason, in view of recent extensive surgical experience, it has seemed to me that clinicians are inclined to attach too much prognostic importance of an unfavorable character to many of the factors usually considered in forming a prognosis in this disease. Surely, the ordinary course of appendicitis is not particularly destructive to life in the individual case, since the vast majority eventuate in recovery without operation.

In general, even if the existence of the necessity for operation in the majority of cases be admitted, it must be recognized as a procedure to be undertaken only after the chances of a cure being thus obtained are fully considered. The formulation of a complete list of the indications that call for surgical treatment, however, is a task which yet remains to be accomplished by the surgeons. In fresh cases of frank appendicitis, in which a diagnosis is reached within the first twenty-four hours, operation is devoid of the dangerous complications, which are so common in cases treated surgically at a later period. On the other hand, the lightest grades of appendicitis in which doubt may surround the diagnosis and all factors possessing an unfavorable prognostic import are absent, scarcely require immediate operation. Should indications for operation arise during the course of these cases, they are generally amenable to surgical treatment, provided that it be then carried out without delay.

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## THE DIAGNOSIS OF ACUTE ANTERIOR POLIOMYELITIS

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The renewed interest in acute anterior poliomyelitis provoked by the recent outbreak of the disease here and there in epidemic form, and the brilliant results of the laboratory observations of Flexner and others, have obliged us to regard it clinically from a somewhat new viewpoint. The infectious nature of the disease long urged from the clinical side,\* has at last been positively established experimentally. Its primarily vascular pathology, also long taught by some of us,\* has finally been fully recognized. In a word, the newer observations have advanced us to the point of emphasizing more strongly the importance of the *infection*, and by showing that the same infection lies behind a *number of other clinical entities*,

\*Mettler, *Diseases of the Nervous System*, Cleveland Press. Chicago, 1905.

thus minimizing the mere groups of symptoms which we have heretofore been regarding as distinct and separate diseases. The qualitative terms *anterior* and *polio* have now lost much of their significance whereas the specificity of the etiological agent has become the important thing. Though there is yet much to learn about this specific agent, we know enough now to assert that it is the only and essential cause of the epidemic outbreaks and sporadic cases which we have heretofore been calling acute anterior poliomyelitis, and that it in itself constitutes *the* disease however it may reveal itself through the varied functional activities of the brain, spinal cord and peripheral nerves. If we succeed in discovering and appropriately naming the specific germ that is the cause of these epidemics, that will naturally become the name of the disease. All names now in existence and that may hereafter be proposed to represent merely the clinical symptomatology will prove to be unsatisfactory and misleading. Acute anterior poliomyelitis is entirely too narrow a term. So also would be epidemic infantile paralysis, or even epidemic paralysis. The nearest approach to an accurate name, in the present state of our knowledge, would be *infectious meningoencephalomyelitis*, and yet it is obvious enough that this is both too broad and too narrow. No case so far has revealed encephalitic, myelitic, neuritic, and meningitic symptoms all at the same time. Though cases do occur that are called sporadic, the probability is that their infection has been brought to them from some more or less remote endemic or epidemic center. Oppenheim long ago observed that most of the cases that he saw came from Weissensee near Berlin. Though most effective in children the infection does attack adults. All of which facts, when taken together, suggest the wisdom of not attempting to rename this affection until we can name and identify the infectious agent. As in tuberculosis, then we will have a definite nosological conception of the malady and not be continually misled by mere symptomatic and functional differentiations in the clinical presentations of the one and the same infection. The immense practical value of thus riveting the attention upon the infection instead of upon its various symptomatic exhibitions is too obvious for further comment.

Adopting the term epidemic infantile paralysis with all its shortcomings, as one less objectionable than acute anterior poliomyelitis,

and remembering that the infective process in all of its ramifications and modes of activity represents *the* disease under discussion, I desire in the present article to call attention to a few points in its diagnosis for two special reasons. The first is that this malady, now being brought so prominently to the attention of the profession at large, illustrates most vividly the superiority of a *physiological* over a mere *symptomatic* diagnosis, as I contended in a paper published in this journal in January, 1908. The second is that unless very great care be exercised, coupled with accurate knowledge, a number of other paralyzes, similar in general complexion but with very dissimilar prognoses, are going to be mistaken for epidemic infantile paralysis with the most unhappy results. In other words, it seems to me that the revival of interest in acute anterior poliomyelitis calls for more than an ordinary, merely perfunctory consideration of its symptomatology, and that the correct diagnosis of it, rendered more emphatically necessary at this time by reason of this awakened interest, can only be assured when established on physiopathological rather than on mere symptomatic presentations.

In my earlier paper I endeavored to show how a large number of diagnostic errors were made in neurology because symptoms, both singly and in groups, were wholly depended upon to give the case in hand its nosological status. In other words, the general practitioner too often stores his memory merely with the symptoms of the disease, the bald clinical picture, as they are detailed in the average textbook, and then strives to fit the manifestations in toto of the case under examination with this symptomatic textbook picture. Perhaps the general practitioner is not to be too severely blamed for doing this; for I know of a very popular neurological work, admirable in all other respects, in which the avoidance of all adequate discussion of the physiopathological reasons of the manifestations of the disease is painfully apparent. To learn neurology from such a work is like learning multiplication from a multiplication table, a parrot-like task.

*The analysis and explanation of symptoms*, not merely in a general way as in a textbook paragraph, but also in the practical examination of each individual case, is the only scientific, indeed, the only safe, ground whereon to erect the diagnosis. When Fagge wrote, many years ago, that "the symptoms of nervous disease are, almost

without exception, those of perverted nervous function," he was intimating what in the practice of neurology is so often overlooked, namely the importance of the constant study and application of physiology and physiopathology. Sherrington has recently emphasized the same idea in the words, "with the progress of natural knowledge, biology has passed beyond the confines of the study of merely visible form and is turning more and more to the subtler and deeper sciences that are branches of energetics." Function and the explanation of function, both normal and abnormal, being so prominent in the symptomatology of neurology, a knowledge of the physiology of the nervous system is an absolute sine qua non for the intelligent comprehension of its manifestations and the correct diagnosis of its disease.

While the newer studies of infantile palsy have not advanced our knowledge as much as would at first appear, they have undoubtedly established what we had already more than suspected, namely, that it is primarily an infection, that it occurs epidemically, that pathologically it is a vascular interstitial inflammation with mere secondary changes in the ganglionic cells, and that it is a more widely distributed disease process than is indicated in the name acute anterior poliomyelitis.\* All of which facts should be kept well in mind when making a diagnosis in any individual case.

\* Mettler, *Diseases of the Nervous System*, 1905, p. 542. The cause of infantile palsy is without doubt some form of *infection*. Most remarkable and suggestive, however, are the *epidemics* of anterior poliomyelitis that have been reported. The essential lesion in this disease is an *inflammation* of vascular origin in the *anterior gray horns of the spinal cord*, with subsequent *degeneration* and *disappearance of the ganglion cells and their processes*. The work of Marie and Goldscheider, Redlich and Siemerling seems to intimate that the process is primarily a *general inflammation of the cord, i.e.*, that while the entire cross-section is involved, the maximum point of the trouble is located in the anterior horns. . . . Most of the earlier examinations of Charcot and others were made in the later stages when the inflammation had long subsided and when the atrophic condition was in evidence, and explain the earlier teaching, now known to be erroneous, that the disease is primarily a parenchymatous inflammation of the ganglion cells of the anterior gray horns. . . . In many cases the adjacent parts of the *cord and meninges* are softened and congested. . . . When the disease is among the lower *medullary nuclei* it is known as inferior polioencephalitis; when among the upper, or nuclei of the motor oculi, it is spoken of as superior polioencephalitis. (pp. 543-544.)

Wickman recognizes eight clinical types of the disease which shows how much more emphasis is being laid upon the infection to-day than formerly, and how much more widely distributed the disease process is now supposed to be. These are as follows:

1. *Spinal poliomyelitic form*;
2. *Ascending form*, including Landry's type;
3. *Bulbar or pontal form*, involving the cranial nerves, with or without involvement of the extremities;
4. *Cerebral or encephalitic form*;
5. *Ataxic form*;
6. *Polyneuritic form*;
7. *Meningitic form*;
8. *Abortive form*.

As we read this now accepted classification of Wickman, we realize how heretofore our diagnoses of acute anterior poliomyelitis were but differentiations along functional lines, mere physiological diagnoses. We are forcibly reminded by this of a similar contention made long ago by Charcot when the pathologists of his day were insisting upon multiple neuritis as a unique and separate disease. Just as this master in medicine recognized that it was the *general intoxication* behind the multiple neuritis, involving much more than merely the end-twigs of the nervous apparatus that constituted the disease, so to-day we are beginning to realize that it is the *specific infection*, whatever we may learn ultimately as to its real nature that constitutes the disease, and not the mere physiologically different forms under which it reveals itself.

As in all *generalized infections of the nervous system*, the clinical manifestations of epidemic infantile paralysis separate themselves into two fairly well defined groups. The earlier group is that of a general toxemia; the later group consists of the localization signs. The first group, being general and toxemic, implicates especially the primary functions of the organism; it is characterized by disturbances of the temperature, pulse, respiration, bowels and other vegetative organs of the body. These symptoms differ in no respect from those of any other form of infection; hence they are of no assistance in themselves in the making of a diagnosis. This being the weak point in the recognition of acute infantile palsy, the phy-

sician, by the same token, should be doubly alert in their presence. Though the disease is known to occur at any age, it attacks so much more frequently children that when a child complains at the end of an uneventful day of headache with a little stiffness in the back of the neck, with possibly a mild irritation of the upper air passages resembling a coryza or bronchitis, and especially with a sudden rise of temperature and pulse-rate together with restlessness, irritability, anorexia, nausea, vomiting, tendency to delirium and convulsions accompanied by profuse sweating with marked hyperesthesia and sensitiveness to movements, a lively suspicion should be awakened at once of the onset of acute anterior poliomyelitis.

It is a very easy matter, but one that is useless, to look back, after a case has been sufficiently developed to be positively diagnosed as infantile paralysis, and label prodromata such manifestations as indefinite general malaise, slight headache with one or two seizures of vomiting, constipated or loose bowels, indefinite gastrointestinal disturbance. So far as this disease is concerned such symptoms tell nothing. Of very little more value are such early symptoms as pain and tenderness in one or other of the extremities of a child. Even an initial convulsion does not help the examiner much. Writers may go on filling their pages with elaborate descriptions of these early manifestations of the general infection, but the practitioner, face to face with the case, knows only too well how desirable it would be to have at this time at least one characteristic symptom whereon he might form a tentative diagnosis even of acute anterior poliomyelitis. We are told that Lucas has noted a fairly constant lymphocytosis, the lymphocytes running up to 40 per cent., this being coincident with a fall in the total number of white cells. About this time also there is often observed an increase in the number of the cellular elements of the large mononuclear type in the cerebrospinal fluid. Polymorphonuclear cells reappear in the later stages of the disease. Unfortunately, none of these findings are characteristic enough to base a definite diagnosis upon.

It is still sadly true that a diagnosis of infantile palsy, epidemic or sporadic, cannot be made with certainty until the appearance of the paralysis, and this represents the beginning of the second or physiological localization group of symptoms. The diagnosis now must be made upon something more than a mere group of clinical

manifestations. A *physiological* analysis of the symptoms must be made whereby a *physiopathological* diagnosis will be arrived at with all its definite superiority over a mere *symptomatic* textbook diagnosis. Let me repeat: not until the localization signs are fairly well established by the peculiar characteristics of the paralysis as shown by a thorough analysis of it along well-recognized physiological lines can a positive differentiation of acute poliomyelitis be formulated. Unless physiological guides be followed, all sorts of infective processes that reveal themselves principally through the nervous system are going to be mistaken for acute anterior poliomyelitis and its congeners. This is already beginning to be apparent in general practice, the awakened interest in acute poliomyelitis accompanied by inadequate knowledge of the anatomy and physiology of the nervous system, leading to the diagnosis of this disease in many cases where it does not exist.

The *motor paralysis*, the only symptom to which that much abused term pathognomonic can with any sort of justice be applied, is of the *lower neurone type*. That means it has certain characteristics which distinguish it from all other kinds of palsy. To be sure, a few cases have been reported in the recent epidemics in which the paralytic manifestations seemed to point to involvement of the upper neurone type. In these there was a tendency to slight spasticity and exaggeration of the reflexes. But as these cases were comparatively few in number and their peculiar type of paralysis occurred so early in the course of the disease, we may pass them by as interesting exceptions to the rule, as we may account for them on the basis that they are somehow the permanent results of the meningitis and general myelitis that appear in the beginning more or less, of all cases of acute poliomyelitis. In this connection it may be of interest to recall that many cases of infantile diplegia and hemiplegia were believed by Strumpell to be dependent upon a *polioencephalitis*, an affection analogous to and in the same general category as poliomyelitis.

Notwithstanding the fact that we have at last recognized the disease acute anterior poliomyelitis as one of a general vascular character, with an incipient pathology involving the meninges, cord, brain and medulla, the seemingly selective action of the infection is sooner or later shown in the brunt of the damage falling upon the neurones of the lower motor segment.



Recalling for a moment the physiology of the lower motor neurones—those neurones whose cell bodies are located in the anterior horns and medullary nuclei of the cerebrospinal axis and whose axones pass out by way of the anterior roots and motor constituents of the cranial nerves to terminate in individual muscles—it will be readily understood how these neurones, when damaged, can produce functional inability and wasting in the individual neuromuscular apparatus. The functional inactivity is undoubtedly rendered so extensive in the beginning of the trouble by the edema and extravasation in the gray matter. As the latter subsides, however, some of the neurones recover their functional integrity while others remain permanently damaged. This explains the first great characteristic of the paralysis of this disease and helps to differentiate it from practically all other forms of paralysis. *The paralysis attacks individual muscles and is followed by atrophy of those muscles.* Of course death may occur before the atrophy appears, as when the disease is of the Landry type or when it attacks the medullary nuclei. Yet even in these fulminant cases the characteristic picking out of individual muscles is more or less noticeable. Cerebral and neuritic palsies do not exhibit this peculiarity. The former involve groups of muscles that subserve the higher psychophysiological movements while the latter implicate usually two or more muscles that receive their nerve supply by way of the same or closely related nerves.

The nature of the lesion accounts not only for the recession of the paralysis from its initial wide distribution, but it also makes plain why ultimately it remains so scattered here and there about the body, as for example the thigh of one leg and the arm of the opposite side.

As the lower motor neurones with their related muscles are to be looked upon as integral physiological units, it is easy to understand how, when the neural end of this neuromuscular apparatus is damaged, the paralysis is of the flaccid sort, the muscles are wasted, the involved reflexes diminished or lost, the electrical changes clear and distinct, and the objective sensory manifestations more or less normal. And finally the disproportionate functional activity between the antagonistic damaged and undamaged muscles easily accounts for the final deformities and contractures.

Such is the clinical picture, unique, clear and pronounced, of

acute anterior poliomyelitis in its typical form. First are the general indefinite manifestations of the infection upon which nothing more than a suspicious diagnosis can be made. Then in a few hours appears the typical complete flaccid paralysis, very widespread at first and accompanied by more or less indefinite rheumatic-like pains. At this point a fairly definite diagnosis of acute poliomyelitis may be formulated. An absolutely positive diagnosis cannot be established, however, until the next set of phenomena show themselves, including the gradual delimitation of the paralysis to individual muscles; this paralysis being unaccompanied by any sensory disturbance but followed by rapid atrophy of the muscle, loss of the related reflex and the appearance of the electrical reaction of degeneration. The last stage is that of the deformities resulting from muscular imbalance. This clinical picture is so unique and precise, based as it is upon pure physiopathological grounds, that it constitutes one of the most accurate and beautifully scientific that neurology has to offer.

"There are no sensory symptoms that belong to this disease. Sometimes in the beginning there are dull pains of a rheumatoid character in the muscles. If these pains become severe or the muscles are unusually tender on pressure, there is probably some degree of peripheral neuritis with the poliomyelitis. . . . There are no psychic troubles except the early febrile stupor and delirium; and the sphincters are never involved." (Mettler, loc. cit. p. 547.) While these statements are true to-day of typical acute anterior poliomyelitis, the recognition of the infection as the disease proper in the absence of a positive indication of the specific virus which we now believe to be the cause of acute poliomyelitis, this newer view of the disease is going to render its differential diagnosis proportionately more difficult. Formerly it was perfectly allowable to say that "a few atypical forms of the disease may cause some confusion in differentiating them from hematomyelia, acute rachitis, coxitis, osteomyelitis, syphilitic pseudoparalysis, acute myelitis, acute disseminated myeloencephalitis, birth palsies, cerebral palsies, progressive muscular atrophy, lumbar spinal gliosis, congenital muscular defects and multiple neuritis or neuritis of special nerves." (Mettler, loc. cit. p. 549.) The trouble now is that these so-called "atypical forms" are none the less typical because they are less frequent than the old classical textbook forms. Indeed the only typical thing about the

disease, as we recognize it to-day, is the infection, and we know precious little as yet about that. Cerebral and neuritic palsies when due to this infection are quite as typical as the spinal forms. It is of less importance, therefore, whether we call the case spastic cerebral palsy, flaccid spinal palsy, neuritic paralysis or even meningitis, since all these clinical forms appear as a result of this specific infection. And yet notwithstanding this fact, the lower motor neurone or flaccid type of paralysis is so dominant in epidemic infantile palsy that for the present we can still cling to the classical picture of acute anterior poliomyelitis as representing more or less typically the clinical picture of the disease.

A few clinical differentiations, though less pronounced than we were wont to hold them, may still be remembered with profit until we are in a better position to diagnose absolutely the presence of the specific infection behind acute poliomyelitis. In hemorrhage of the cord and acute myelitis there are very prominent sensory symptoms as a rule, the reflexes are exaggerated (except when the damage is in the lumbar region). The sphincters are involved and bedsores tend to appear early. *Hemorrhage* of course is sudden, but does not occur often without trauma. In its onset *myelitis* is slower; its fever is not so high usually as that of epidemic acute myelitis, and it is longer in duration; its paralysis does not recede and remains permanently in particular muscles. It must be remembered in this connection that the earliest symptoms of infantile palsy are quite indicative of a transverse myelitis or rather extensive meningomyelitis with the inflammation soon receding except from the anterior horns where its maximum foci were located. This is doubtless the explanation in part of the early sensory phenomena, like the rheumatoid pains often complained of, and of the initial paraplegic-like distribution of the paralysis. Doubtless in a few cases an initial neuritis must be invoked to explain these early sensory symptoms in acute poliomyelitis. This hyperesthetic condition of the involved limb during the first few days is of much assistance in the making of the diagnosis. As the inflammation subsides these sensory manifestations, in the vast majority of the cases, disappear.

Oppenheim has well pointed out that *acute rachitis*, *coxitis*, and *osteomyelitis* are to be distinguished from the early stage of poliomyelitis by the resistance which the child offers in the former when

passive movement is attempted. The little patient contracts his muscles and holds them in a state of rigidity to avoid the pain of movement.

*Syphilitic pseudoparalysis* can now be diagnostically established by a blood test and the history of the infection. There are other marked signs as a rule of this specific disease, and there is a difference in the character and distribution of its paralyses.

*Epidemic cerebral palsy* is relatively so infrequent that we may still attempt a differentiation between it as a phase of epidemic infantile palsy and the ordinary type. The latter comes on abruptly as a rule, is decisively hemiplegic in character and distribution and is accompanied by rigidity and exaggeration of the reflexes. There is mental depression of a profound sort and stupor, while a series of focal or Jacksonian convulsions may occur. Of course all of these manifestations may be observed in a case of epidemic infantile palsy because we now recognize that the same infection attacks the brain that causes the acute poliomyelitis. Nevertheless in the epidemic disease, even when of the cerebral type, the paralysis will appear sooner or later as a scattered one of the lower motor neurone type and not so definitely hemiplegic in character and distribution. In other words, the ordinary cerebral palsies will be more or less decidedly and only cerebral in their clinical appearance whereas the epidemic cerebral palsies will have more or less associated with them some evidence of spinal or neuritic involvement also. Epidemic infantile palsy, even of the cerebral type, is a much more diffuse disease process than that which lies behind the ordinary cerebral palsies. The same may be said, by way of a general differentiation, of the so-called *birth palsies*, though the latter will cause some confusion because the paralysis here is of the flaccid degenerative type. It involves usually only the arm, and is more or less traumatic in origin.

*Progressive muscular atrophy* rarely occurs in children. Moreover, it is gradual in its onset, slow and steady in its progress, without febrile or sensory phenomena.

*Peripheral neuritis* and especially *multiple neuritis* are rare though they do occur in children. Many of the cases that formerly were supposed to complicate acute anterior poliomyelitis are now recognized as being in all probability due to the same infection. It would be highly satisfactory if we could always differentiate a polio-

myelitic from a neuritic paralysis, but that is practically impossible. All that we can do is to inferentially distinguish a generalized poliomyelitic from a generalized neuritic process. The former will have all the earmarks of epidemic infantile palsy as I have tried to point them out in the foregoing. The non-epidemic forms of neuritis may be diagnosed by the history, by the absence of associated manifestations that point to acute poliomyelitis, by the more gradual onset of the trouble, the more marked local pain and tenderness on pressure, and the slight or absent febrile phenomena. When fever is present it lasts longer than the fever of poliomyelitis. The paralysis assumes more of the bilateral type in multiple neuritis and the monoplegic type in simple neuritis. It is slower in development as compared with the paralysis of poliomyelitis. The atrophy is not quite so pronounced and is slower in appearing. Vasomotor disturbances occur such as edema. And yet, after all, it must be admitted that the etiology alone distinguishes acute poliomyelitis from general neuritis, and that when both sets of symptoms may be dependent upon the same infectious agent, the clinical differentiation between the two diseases is not only difficult, but rather unnecessary.

The conclusion which I wish especially to draw from all this is that until we know more about the nature of the infection causing epidemic infantile palsy, we must refrain from naming the disease anew and calling it, as we have heretofore been doing and must continue to do for some time yet probably, in accordance with its mere adventitious clinical or pathological manifestations. And finally as we have yet no means of identifying the infection and basing a diagnosis (which of course would be the only correct and positive diagnosis) upon it, we must employ most carefully the physiopathological method in diagnosing the various clinical forms under which the malady presents itself, remembering all the while that there is enough of a general similarity, in some particulars at least, between all of these forms to indicate their close relationship to one another and to one and the same infective process.

## A FURTHER NOTE ON THE DIAGNOSIS OF SMALL-POX

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In *The Archives of Diagnosis* for April, 1909, I reviewed the diagnosis of small-pox based on an experience with nearly 900 cases. Since that time I have seen nearly 300 more cases of the disease, and would like to emphasize and elaborate some of the statements made in my former communication. With regard to the benign type of small-pox with which we all are now familiar it is necessary to state that the disease as time goes on is becoming more and more benign, so that in the past five months I have seen but 4 out of 92 cases that approach in severity the common run of cases of four years ago. So insignificant, in fact, have the eruptive symptoms of the disease become that, in reviewing the cases seen in the past five months, I find that over 60 per cent. of the patients had not consulted physicians and of the remaining 40 per cent. about 15 per cent. had been wrongly diagnosed or not been diagnosed at all. Such a condition of affairs makes the spread of the disease impossible to control, and often an investigation of an individual case has shown that the disease has been endemic in a part of the city or a school district for weeks before its presence was suspected. This is true for two reasons: first, because of the mildness of the disease, and second, because if a physician is in attendance he is often dismissed when the fever subsides coincident with the appearance of the eruption. A large percentage of our cases are among children, as our compulsory vaccination law for school children was repealed some years ago. Most of our patients reside in parts of the city where the parents are foreign born, and therefore protected by vaccination, the adult and older members of the family thus escape the infection. The mildness of the disease has become such that parents do not recognize it as anything more than "pimples," or in some cases as chicken-pox, and no attention is paid to it. In consequence of this very mild type of small-pox three points of diagnostic interest may be noted. First, variola sine erup-

tion I find is more common than I supposed when writing my former paper. Secondly, in many of these mild cases there has been a marked increase in the length of time from the incidence of symptoms to the outbreak of the eruption. Usually the eruption occurs on the third day of illness, while in many of these exceedingly mild cases, where but from five to twenty pocks constitute the entire eruption, this period may be lengthened to from four to five days. Lastly, I am firmly convinced, though I have never seen it mentioned, that an abortive type of eruption occurs, that is, after the preliminary symptoms a few papules appear which remain about two days and then disappear by absorption without vesiculation, pustulation or crust formation; the whole process of the eruption lasting but four to five days. These papules do not show umbilication nor any characteristics of the small-pox papule, except the shot-like feel and the color. Such a condition as just described I have noted now in seven instances in persons living in the same house or in the same family with those having frank eruptive symptoms of the disease. While there has been no doubt in my mind as to these people having small-pox, the problem has been how to isolate these patients, because, if the diagnosis was questioned it would be difficult if not impossible to substantiate it. Other problems relating to quarantine also arise when dealing with cases of this nature, which, while they have nothing to do with the diagnosis are most perplexing from a Public Health point of view.

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## THE DIAGNOSIS OF CHRONIC PANCREATIC DISEASE

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The recognition in the living subject of pathological conditions of the pancreas, belongs, without doubt, to the more difficult problems of the diagnostic technic of the present day. Thanks to the

quiet, unceasing labors of a host of scientific investigators all over the world, we are beginning to gain more light on this subject, although the correct diagnosis of pancreatic affections, in the majority of cases, still puts the diagnostic skill of the clinician to a severe test.

In the course of the last two years I have had the opportunity of observing a small series of cases of pancreatic disease, in four of which the diagnosis was verified, partly by necropsy, partly by surgical autopsy, and it appeared to me that it would be of interest if I could present in concise form what the latest achievements of physiological, chemico-pathological, and clinical research have to offer to the physician as diagnostic aids in this field. Without laying any claim to originality, I propose only to review the most important methods of diagnosis, in particular those that concern functional diagnosis, and to make a clinical estimate of them, as far as a limited number of cases will permit.

Among the more prominent scientific events bearing on our subject are the following:

(1) The discovery by von Mering and Minkowski, in 1889, which showed typical diabetes in dogs, following extirpation of the pancreas.

(2) The experimental work of Pawlow and his pupils (notably Boldyreff and Schepowalnikow) on the physiology of the pancreas.

(3) The communication of Cammidge, of London, in 1905, in regard to the so-called pancreatic reaction which, however, is still sub judice.

(4) The recently announced method of Einhorn, of New York, of aspirating the pancreatic juice directly from the duodenum in the living subject.

Besides these, there are quite a number of other, more or less noteworthy achievements in this domain, to which reference will be made later.

In dealing with *the physiology of the pancreas* we should bear in mind, that there is an external secretion, dependent on the glandular acini, which supplies the digestive juice that flows into the duodenum; and that also an internal secretion is assumed to exist, dependent, in all probability, on the islands of Langerhans. By these we understand the more or less closely crowded groups of polygonal



cells without excretory duct, which are scattered among the acini in the stroma of the gland, surrounded by a profusely developed vascular net-work. The secretion from these islands is supposed to be emitted into the surrounding lymphatics and blood vessels, and the special province of this secretion seems to be the control of the carbohydrate metabolism of the body. According to Löwi, it also exerts an inhibitory effect on the sympathetic.

The value of the pancreatic juice, both as a factor in digestion and as the object of diagnostic deductions, depends on its contents of enzymes. For our purpose we have to take into consideration the fat-splitting ferment, or steapsin; the diastatic ferment, or amyl-opsin; and the proteolytic ferment, or trypsinogen, which, coming into contact in the small intestine with another ferment, the enterokinase of Pawlow, is activated, that is, is converted into fully effective trypsin.

Autodigestion of the pancreas is prevented, partly through the very slight activity of the trypsinogen present in the gland, and partly through the presence in normal blood of antitrypsin which, in cancerous and cachectic patients, is found to be increased in quantity.

A fourth ferment, rennet, to which attention was called by Wohlgemuth, has so far not proved its value for diagnostic purpose.

The hormon, which was found by Starling and Bayliss, and called "secretin," is no ferment, nor has it obtained any diagnostic value up to the present, although at some later date it may become of therapeutic value, as it is said to powerfully stimulate the pancreatic secretion when introduced into the blood current.

In establishing the *diagnosis of chronic pancreatic disease* it is in the first place necessary to demonstrate whether or not the pancreas is at all the affected organ—this is generally the more important and difficult task. The next step is to ascertain of what nature that affection may be.

In order to determine whether a pancreatic affection is actually present, we have recourse in the first instance to the customary methods employed in the examination of other organs: inspection, palpation, etc., and thereafter to various methods based upon the disturbance of the special functions of the pancreas, and hence,

more or less pathognomonic as regards the gland. Accordingly we divide the semeiology of pancreatic affections under the heads of general and functional symptoms.

#### GENERAL SYMPTOMS

The general symptoms are: pain, tumor, pressure on the neighboring organs, and cachexia.

(1) *Pain*.—Sensitiveness to pressure. According to Mayo Robson, there is, in inflammatory conditions of the pancreas, a rather typical point of sensitiveness slightly to the right, and above the umbilicus.

Spontaneous pain. While the course of acute pancreatitis is usually accompanied by the most intense pain, chronic affections are frequently painless, even in advanced stages of the process; or pain may occur in consequence of inflammatory conditions of the pancreas and its serous covering; or from pressure on the adjacent organs, as for instance, the celiac plexus; or there may be spastic pain such as occurs in particular in cysts of the pancreas.

Thus, a patient with a pancreatic cyst, who is still under observation, complained for months before he was operated on, of severe cramps in the upper abdominal region, especially after meals; the pain disappeared after evacuation of the cyst. On the other hand, there was no pronounced sensitiveness to pressure.

In a case of cancer of the head of the pancreas, in which the diagnosis was subsequently confirmed by autopsy, the patient suffered from such incessant pain in the lower abdomen that for weeks he was unable to sleep without the aid of morphine.

In another case of pancreatic tumor the primary symptom was severe pain in the lumbar region lasting several weeks; acute abdominal pains not 'setting in until the inflammatory process had spread from the pancreas to the transverse colon, resulting in the formation of adhesions and intestinal stenosis. On severing the adhesions the pain ceased, though the tumor, which was not removed, remained sensitive to pressure, and is so to this day.

The value of pain as an aid in diagnosing disease of the pancreas is very restricted; it chiefly directs the attention of the physician to the abdominal organs, thus suggesting the possibility of the existence of some affection of the pancreas.

(2) *Tumor*.—Owing to the deep position of the gland in the abdominal cavity it is usually difficult to palpate a pancreatic tumor. An exception to this rule is found in the case of cysts and tumors of the tail; the former because they frequently attain a considerable size; the latter because they usually extend far to the left, where, being no longer concealed by the lower border of the liver, they are readily palpated. Tumors of the head of the pancreas may be mistaken for pyloric, duodenal, and hepatic tumors. Tumors of the pylorus are apt to shift their position slightly with respiration, while pancreatic tumors are immovable. Tumors of the tail, on the other hand, are often freely movable, and may be distinguished from tumors of the fundus of the stomach and of the transverse colon, by inflation of the stomach and intestine, by which means tumors of the stomach and colon become usually more perceptible, while pancreatic tumors are generally less distinct.

The tumor of the tail of the pancreas, alluded to in the foregoing, was readily palpated through the abdominal wall in the left hypochondrium and epigastrium, and was freely movable. Owing to the ease with which it was palpated, to its mobility, and to the intestinal obstruction (due to adhesions to the colon), it was for some time supposed to be a tumor of the colon, until operation revealed its true character.

A considerable diagnostic value is attached to a tumor in the pancreatic region, especially if inflation of the stomach and colon with carbon dioxide or air causes the tumor to disappear. This sign, however, cannot always be relied upon in distinguishing between tumors of the head of the pancreas, and those of the pylorus, duodenum, liver or biliary ducts. Here the diagnosis of a pancreatic tumor should be confirmed by the presence of other pancreatic symptoms.

(3) *Pressure upon neighboring organs*.—Of main importance are pressure upon the duodenum, the ductus choledochus, the colon, the large abdominal vessels and the nerve plexuses; the most important symptoms are the following:

Duodenal stenosis. If the flow of chyle into the small intestine is precluded through pressure on the duodenum, stenosis of the pylorus may be simulated, with its typical manifestations of copious vomiting, gastric pain and dilatation. As it is difficult to distinguish between these two conditions, we must call other symptoms to our aid.

Icterus. Pressure on the ductus choledochus, which in 62 per cent. of the cases passes through the pancreas, or occlusion of the papilla of Vater, will cause jaundice, which, as a rule, develops gradually, becoming very intensive and showing no intermissions, whereas icterus induced by gallstones comes on suddenly and often varies in intensity, owing to a temporary loosening of the concretions. Furthermore, gallstone icterus is generally preceded by typical colicky pains.

Courvoisier's sign is another important symptom; it is based upon the fact that in pancreatic jaundice the greatly distended gall-bladder is usually palpated as a good-sized tumor; whereas in jaundice induced by gallstones the gall bladder is contracted, as a rule. This sign was very marked in one of my cases of pancreatic cancer, and the considerably distended, very mobile gall bladder was easily discernible by palpation.

Clinical valuation: Persistent, non-intermittent icterus, increasing in intensity, with no previous history of gallstone colic, and associated with great distension of the gall bladder, should arouse suspicion of an affection, generally cancerous, of the head of the pancreas, and confirmatory signs should be looked for. In a recent case of a woman, 75 years old, who came under my observation, the icterus presented, in typical association, the five diagnostic signs just enumerated, and suggested a neoplasm of the pancreas long before there was any evidence of glycosuria; the diagnosis was confirmed by the autopsy.

Intestinal obstruction. The fact that pressure on the colon may proceed from the diseased pancreas is shown by our case of caudal tumor, cited above, in which the intestinal obstruction, with symptoms simulating ileus, rendered an operation necessary, and the supposed tumor of the colon was found to be a tumor of the pancreas.

Lumbar and abdominal pains, at times quite severe, are no doubt frequently due to pressure on the celiac plexus, situated behind the pancreas.

(4) *Cachexia*.—We must here take into consideration not alone the emaciation usually associated with malignant neoplasms, but also the digestive disturbances due to the deficient function of the most important digestive gland in the body. The results of the

earliest published experiments of René de Graaf upon dogs with pancreatic fistula, showed that, in spite of a voracious appetite, the animals rapidly became emaciated, from the time the pancreatic juice ceased to flow into the intestine.

#### FUNCTIONAL TESTS

Unfortunately the general symptoms afore mentioned may either leave us completely at sea, as frequently happens in atrophy and fibrosis of the pancreas, and in many cases of chronic pancreatitis, or when even marked may be insufficient to allow of a definite diagnosis. Under such circumstances we must resort to the examination of any functional disturbances that may be caused by pathological changes in the gland. It must, however, at once be stated here that the impairment of function can, as a rule, be demonstrated only in advanced disease of the pancreas.

The possibility of functional diagnosis is dependent on the alteration of the pancreatic secretion; this can be demonstrated either indirectly through the impaired absorption of the ingested food, owing to defective pancreatic digestion or, directly, by the presence or absence of the ferments, the most characteristic components of the pancreatic juice.

The examination of the so-called internal secretion of the pancreas can, in the nature of things, be made only in an indirect manner. The following are the principal functional tests:

##### Proteid digestion

- a.* Examination for muscle waste in stools. (Azotorrhea.),
- b.* Schmidt's test for nuclear digestion,
- c.* Sahli's glutoid capsule test,

##### Fat digestion

- d.* Examination for steatorrhea,
- e.* Examination for fat-splitting,

##### Demonstration of ferments

- f.* In the gastric contents,
- g.* In the stool,
- h.* In the blood and urine,
- i.* In the contents of the duodenum,

##### Internal secretion

- k. Demonstration of glycosuria, both spontaneous and alimentary,
- l. Examination for the Cammidge reaction,
- m. Examination for Löwi's pupillary symptom.

*Examination of the proteid digestion.*—The most important pancreatic function is the digestion of the proteids by trypsin. Meat, which consists chiefly of connective tissue and muscle fiber aside from its enveloping fat, is the foremost representative of the proteins in the human food.

*Azotorrhea.*—As demonstrated by Adolf Schmidt, connective tissue is digested by gastric juice only, not by pancreatic juice. The muscle fiber, on the other hand, remains practically unchanged in the presence of gastric juice, but is digested in the intestine, chiefly through the action of the pancreatic juice. If, therefore, there is undigested connective tissue in the stools, the conclusion of some disturbance in the gastric function is justified, and if shreds of muscle fibers are found it indicates most probably a defective functional activity of the pancreas. Microscopic evidence of striated muscle fibers is of value only when they are present in large quantities. Schmidt, however, advises caution in forming conclusions based solely on microscopic evidence. According to Mayo Robson and Cammidge, muscle waste is chiefly met with in carcinoma, more rarely in chronic pancreatitis. In one of my cases of pancreatic diabetes it was very marked.

The semiotic significance of the presence of undigested shreds of muscle after a Schmidt's test meal is nevertheless considerable, provided there is no diarrhea that would evacuate the intestine before the completion of the trypsin action, provided also that normal gastric digestion dissolves the connective tissue membrane of the meat; that enterokinase is produced in sufficient amount to activate the trypsinogen, and, finally, that there are no dental defects interfering with proper mastication. The test can be readily carried out.

*Schmidt's test for nuclear digestion.*—Schmidt assumes that the cell nuclei of meat are digested, not by the gastric, but by the pancreatic juice. The test is carried out as follows: small cubes of meat, hardened in alcohol and dehydrated, are placed in tiny gauze bags and swallowed by the patient together with the test meal. They can easily be recovered in the stool, hardened, cut, stained, and

examined for the presence of tissue nuclei. As diarrhea interferes with the test, and as bacteria might dissolve the nuclei, Schmidt, himself, admits that pancreatic disturbance can be assumed only when practically all the nuclei have been recovered.

Brugsch and Schittenhelm consider this test of no value, as it rests on false premises, inasmuch as the pancreatic juice is incapable of dissolving nuclear tissue; the latter is accomplished by the intestinal juice and the intestinal bacteria.

Sahli's glutoid capsule test.—The glutoid capsules are made of gelatin, hardened by formalin to such a degree as to withstand gastric but not pancreatic digestion. They usually contain sodium iodide, which is set free as soon as the capsule is dissolved by the trypsin, and is then found in the saliva or the urine. Should the reaction not take place within the time experimentally found to be the average for human subjects (4-6 hours), a defective functional condition of the pancreas may be assumed to exist.

Experiments with glutoid capsules by Fromme and Wallenfang showed, however, on the one hand, that in human subjects with a sound pancreas there might be retarded reaction; that on the other hand reaction was normal in dogs after extirpation of the pancreas.

*Fat digestion.*—Of diagnostic importance are: (1) the evidence of steatorrhea, (2) the diminution of soaps in the stools.

A minor function of pancreatic lipase is the emulsifying of fat, which is the special province of the bile; its far more important function is the splitting of the neutral fats into glycerin and free fatty acids which, combining with the alkali of the pancreatic and intestinal juices, form readily assimilable soaps. The intestinal juice and intestinal bacteria, and also the weak gastric lipase, have but little to do with fat-splitting.

If the functional activity of the pancreas is deficient, the first consequence will be a considerable diminution of split fat and, therefore, of soaps, owing to the absence of the fat-splitting steapsin, and of the alkali of the pancreatic juice necessary to the formation of soaps; another result will, as a rule, be an increase in the total amount of fat in the feces, as, not being split, it is not assimilable.

If, as often occurs, in addition there should be occlusion of the common bile duct, there will be a large amount of fat waste. From the investigations of Friedrich Müller and others we are justified to

draw the following conclusions as to the appearance of fat in the stools:

1. Normally, 7-11 per cent. of the ingested fat are not utilized and evacuated.

2. If there is complete occlusion of bile from the intestine, the loss of fat in the stools is about 45 per cent. of the fat ingested with the food.

3. If in icterus the loss of fat is below 60 per cent., involvement of the pancreas may be excluded in the differential diagnosis.

4. On the other hand, if the loss of fat exceeds 60 per cent., pancreatic affection is probable.

Clinical valuation: There are a number of cases on record in which, notwithstanding marked disease of the pancreas, no disturbance of the fat digestion could be demonstrated. Moreover, these quantitative tests for fat are tedious and time absorbing; hence, they are not adapted for the use of the general practitioner. If, however, one has at his disposal the services of a pathological laboratory, they will furnish information which, in conjunction with other symptoms, may be of value and which may be summarized as follows: In pancreatic insufficiency the soaps in the stools are usually diminished; in pure icterus the soaps are increased; and the amount of total fat is increased in both cases.

The exact quantitative determination of the total fat and of the soaps in the stools, in conjunction with the demonstration of muscle waste, justified me in pronouncing a case of diabetes as pancreatic diabetes; autopsy has not yet supplied the proof for the correctness of this diagnosis.

*Carbohydrate digestion.*—Disturbed absorption of the carbohydrates does not usually occur when there is deficiency or occlusion of the pancreatic juice from the intestine (Schittenhelm); according to Müller and Brugsch amylum in the feces is absent even in total occlusion, owing to the action of intestinal bacteria; according to Schmidt, the intestinal juice exercises a vicarious function for the pancreas under these circumstances.

*Demonstration of ferments.*—Trypsin can be demonstrated by a variety of methods in the contents of the stomach and small intestine, as well as in the feces. In one case of acute pancreatitis Opie found steapsin in the urine, and Wohlgemuth recently has called attention



to the importance of the demonstration of pancreatic diastase in the urine, blood and feces.

Volhard's method of demonstrating trypsin in the gastric contents.—This is based upon a communication of Boldyreff in 1904, stating that he had observed a regurgitation of pancreatic juice, intestinal juice and bile into the stomach, if the latter contained fatty food. According to Volhard's method, 200 c.c. olive oil are introduced into the empty stomach by means of a stomach tube (to avoid nausea) and syphoned out half an hour later. Usually a liquid in two layers is obtained, the upper layer containing the oil, stained green with bile, the lower one the pancreatic juice, in which the tryptic ferment can be demonstrated, for example by the casein test. Since gastric juice destroys trypsin, 1 gram magnesia usta is added to the oil in accordance with Lewinski's suggestion, and this gives in normal individuals a positive trypsin reaction in 100 per cent. of the cases.

In one of my cases which was accompanied by intense jaundice, the negative result of Volhard's test, together with alimentary glycosuria and a positive Cammidge reaction, decided the question between carcinoma of the biliary ducts and carcinoma of the pancreas. In another case (pancreatic cyst) trypsin was likewise absent according to this test. After an operation a pancreatic fistula developed, and in the secretion therefrom steapsin and amylopsin were present but neither trypsin nor trypsinogen.

This method of Volhard's "oil breakfast" is valuable and can be easily carried out, although the demonstration of trypsin in the gastric contents by the casein method is rather complicated. The carmin-fibrin process is simpler. Aside from pancreatic affections the test is negative also in pyloric stenosis and hour glass stomach.

Schlecht's serum plate method.—The idea readily suggested itself of examining the feces for trypsin. It can here be demonstrated by the Arthus and Hubert method (by the addition of a 2% solution of sodium fluoride and fibrin to the tryptic fluid, which is then placed in the incubator for 24 hours at 40 deg. C., we obtain tyrosin crystals on the glass); or by Abderhalden's method through the digestion of synthetic dipeptids (for instance the glycyl-l-tyrosin, which is split by trypsin, but not by pepsin); or, according to Gross and Fuld, by the casein method, both qualitatively and quantita-

tively; or, finally, by the Schlecht serum method. I shall dwell upon this last more in detail, as it is surprisingly simple.

Schlecht, following the example of Müller and Jochmann, places one drop of the stool obtained by a laxative upon a Löffler serum plate and exposes the same to a temperature of 55-60 deg. C. for 6-12 hours in an incubator. If trypsin is present in the stool, we find at the close of the experiment that it has eaten a hole into the serum, which will be the deeper the greater had been the quantity of the trypsin. If calomel and phenolphthalein are administered before the test is applied, and if stools are excluded which contain pus or much blood, it will be possible, according to Schlecht, to demonstrate trypsin in the stool of almost any healthy person.

As will be seen, the method is by no means complicated. In place of Löffler's serum plates, ordinary bacteria culture tubes may be used, such as are supplied by the New York Board of Health for the diagnosis of diphtheria.

Brugsch regards the evident absence of trypsin in the feces as one of the most important points in the diagnosis of pancreatic affections.

In one of our cases, with a postoperative fistula of the pancreas, neither the secretion from the fistula contained any trypsin, nor could this ferment be found in the feces, whereas simultaneous control tests on healthy persons yielded positive results.

In another case in which the patient, although suffering from advanced disease of the pancreas, showed no functional symptoms, except a positive Cammidge reaction, trypsin was found in the stools by means of the Schlecht test. At a later period, however, a number of functional disturbances set in.

Wohlgemuth's test for diastase.—Quite recently, Wohlgemuth, in the *Berliner klinische Wochenschrift*, emphasized the importance of the quantitative determination of pancreatic diastase simultaneously in the urine and in the feces, as an aid in pancreatic diagnosis, at the same time describing the technic.

He found that in experimental occlusion of the pancreatic ducts the diastase disappeared from the stool, where it is normally easily demonstrated, and also that a few hours after ligation the amount of diastase in the urine (and blood) was enormously increased and remained so for 8-10 days, when it gradually became reduced to nor-

mal. He determines the amount of pancreatic diastase in the stool by a method previously published by him, allowing an aqueous extract of feces, with an addition of a 1% starch solution and toluol, to remain in the incubator for twenty-four hours, and then adding iodine solution; from the more or less advanced transformation of starch into erythro- and achroodextrin he draws quantitative conclusions. Wynhausen has used this method successfully in two cases; personally, I have had no experience with it.

Demonstration of ferments in the duodenal contents.—In a most brilliant and most simple manner the problem of examining the pancreatic function seems to have been solved by the direct removal of pancreatic and intestinal juice from the duodenum, as described almost simultaneously by Max Einhorn and M. Gross. Einhorn introduces a rubber tube, similar to a stomach tube but considerably longer and thinner and carrying at its visceral end a perforated olive, into the stomach, and allows it to glide down about 80 cm. from the teeth. As a rule, the olive will have entered the duodenum in the course of an hour, and the contents of the intestines are then aspirated by a small pump or syringe. In this way natural duodenal contents are obtained from which functional disturbance of the pancreas can be easily deduced by examining for ferments.

This examination can be made by one of the older methods, some of which have been described in the foregoing. In a much simpler way, however, can the ferments be qualitatively demonstrated by the quick reactions of F. Von Oefele; for the details as well as for the permission to publish them, I am indebted to the author.

Demonstration of amylopsin.—5 c.c. of a 1% solution of Kahlbaum's soluble starch, heated in an incubator to 50-55 deg. C., are placed in a previously warmed test tube; 5 drops of duodenal juice are added and the mixture is well shaken for one minute; finally  $\frac{1}{2}$  c.c. of a 250th normal iodine solution is added. (*a*) If there is no amylopsin present, the solution turns sky-blue (or green in the presence of bile); if there is a small quantity of amylopsin present, the solution will be a bluish to a reddish violet; if the quantity present is normal, the mixture will turn pale-pink, and if in excess, it will become colorless; (*b*) if to this solution is added a sufficient quantity of Fehling's alkali, it will always become colorless. A fur-

ther addition of Fehling's copper solution, and boiling, will show whether the starch digestion has at least partly advanced to the formation of sugar.

Demonstration of steapsin.—Sweet butter is melted and the resulting clear fat mixed with an equal proportion of a 1% aqueous solution of potassium carbonate and some phenolphthalein, and then titrated with a soda solution until there is a red tint. This liquid is heated in the incubator to 55 deg. C., and 5 c.c. of it well shaken in a warmed test tube with 5 drops of intestinal juice. In the presence of a normal amount of steapsin the red tint will disappear in from 2 to 5 minutes. According to the rapidity of the discoloration the quantity of the active steapsin can be estimated.

Demonstration of trypsin.—A few drops of Fehling's alkali and 1 per mille casein are added to a solution of 0.07% copper sulphate and 0.1% sodium carbonate. This solution is heated in the incubator to 55 deg. C. Five c.c. of this, together with 5 drops of intestinal juice, are, as before, shaken in a warmed test tube. The color will, at first, be a decided blue, or green if bile be present. If the solution contains trypsin it will take on, within a few minutes, a more or less decided red-violet, or even rose colored tint, according to the amount of trypsin present.

Von Oefele has already begun to work out quantitative tests.

I am under the impression that the combination of the direct abstraction of pancreatic juice (Einhorn) with the rapid ferment tests of Von Oefele will, owing to its simplicity and consequent saving of time, relegate the older methods to the background; a certain small class of cases, such as pyloric stenosis, forming, of course, an exception.

*Internal Secretion.*—There still remain for us to consider a last group of manifestations of functional deficiency in pancreatic affections and perhaps the most interesting one, namely those being dependent on the internal secretion, chief of which is glycosuria. Glycosuria has nothing to do with the secretion of the pancreatic juice emitted into the intestine, because, in the first place, it does not occur even if the total pancreatic juice is abstracted by a fistula; and, in the second place, the entire pancreas may be removed without inducing glycosuria, provided a small piece of pancreatic tissue is sewn into the abdominal wall or transplanted into the peritoneal

cavity, or provided there exists an ever so small accessory pancreas such as is found here and there in the gastric or intestinal wall.

The islands of Langerhans are supposed to produce the internal secretion, although this specific function is denied them by Starling, Hansemann, Dale, Herxheimer, Burkhardt, and others. On the other hand, Sauerbeck, Opie, McCallum and Cecil found in 300 cases of diabetes about 75% in which there were pronounced changes of the islands. One of the latest publications on this point is by Russell C. Cecil, who arrives at the following conclusions:

(1) In  $\frac{7}{8}$  out of 90 diabetic cases there were found distinct anatomical lesions of the pancreas.

(2) In all cases where diabetes depended on disease of the pancreas, there were pathological changes in the islands, mostly fibrosis.

(3) In 12 of the 90 cases, the pancreatic lesion was limited to the islands.

After this careful study of Cecil one is rather forced to assume that the sugar control depends upon the islands of Langerhans.

*Spontaneous glycosuria* is, nevertheless, not very common in pancreatic affections, a small section of the gland with well-preserved islands being sufficient to effect assimilation of the carbohydrates to a certain extent. Robson, for instance, found sugar in the urine in only 4 out of 65 cases of chronic pancreatitis. In such cases the functional insufficiency of the gland, as regards the internal secretion, is often disclosed by the test for

*Alimentary glycosuria*. According to Moritz, Strauss, and others, the assimilation limit for sugar in the normal individual is 200 grams on the average, which means that 200 grams can be administered at a time without any demonstrable excretion of sugar. If, therefore, after ingesting 100 grams of grape or cane sugar on an empty stomach the urine shows dextrose, it would point, with a high degree of probability, to a functional defect of the pancreas, especially if there be other demonstrable pancreatic symptoms.

This test has rendered excellent service in several of our cases.

*The pancreatic reaction of Cammidge* is probably also dependent on the internal secretion of the pancreas. It is very complicated and, expressed briefly, based upon the fact that by boiling urine, rendered free from sugar and albumin, with concentrated hydro-

chloric acid, a substance results, which with sodium acetate and phenylhydrazine hydrochloride forms microscopic needleshaped crystals, arranged in rosettes and sheaves. Cammidge has called his last modification, which is at present generally used, the C-reaction, and establishes the following points concerning its efficacy:

(1) The reaction is not pathognomonic for pancreatic affections, but occurs almost exclusively with them.

(2) It is positive in nearly every case of pancreatitis, but only in 25 per cent. of pancreatic cancer.

(3) It should be considered in connection with other symptoms.

Paying due regard to these points, the test can, in my opinion, not be denied a certain value, although its rationale is still unknown. But since my experience with this reaction is limited (eight cases) I prefer stating the opinion of a few authors who have more closely studied the subject.

According to Wynhausen, the Cammidge reaction is not of much value, certainly not in carcinoma. Roth did not obtain unmistakable results in thirty-two cases tested, nor does the theoretical basis of the test satisfy him. The method is not favorably thought of by Hess, Willcox, Ham and Cleland; Haldane and Evans pronounce it to be without any value, and Wohlgemuth agrees with the latter observers.

On the other hand, W. Hagen, who has used the method in sixty cases, considers it a valuable diagnostic aid in conjunction with the clinical picture. Krienig examined ninety cases, and in eighty per cent. the result of the reaction coincided with the findings at autopsy. Schwarz, after testing the method in thirty-three cases, considers it a very good diagnostic help; so does Dreesmann, although he does not think it absolutely reliable. According to J. B. Schmidt, the reaction does not occur solely in pancreatic, but also in other affections with destruction of nuclein material, as for instance in pneumonia, appendicitis with general peritonitis, etc. He considers the positive reaction diagnostically important in the presence of other pancreatic symptoms. Favorable opinions have further been given by Eloesser, Quénu and Duval, Abagékón, dos Santos; in the cases of experimental pancreatitis of Eichler, Speese and Goodman, the reaction was always positive. Chalmers Watson, who has investigated the largest material—250

cases—is almost enthusiastically in favor of it; Mayo Robson speaks highly of it. Quite recently, Pilcher reported from the clinic of the Mayo brothers that among sixty-two operative cases of pancreatitis eighty-seven per cent. showed positive Cammidge reaction and concluded therefrom that

(1) the internal secretion is responsible for the reaction;

(2) a typical positive reaction with negative control reaction is practically pathognomonic of pancreatitis.

As will be seen, the opinions on the pancreatic reaction are by no means uniform; decision as to its value can as yet not be rendered, but the scales seem to tend in favor of the reaction.

*Löwi's pupillary symptom.* In conclusion I should like to mention a functional symptom that is likewise based upon the internal secretion and was described by Löwi in 1907.

Intravenous injection of adrenalin dilates the pupils; instillation of adrenalin into the eye itself does not cause mydriasis, nor does subcutaneous injection. Löwi found that, after extirpation of the pancreas, mydriasis occurs, too, after instillation into the eye. Of eighteen cases of diabetes he obtained a positive reaction in ten. He explained this by assuming that the internal secretion of the pancreas exerts a constant inhibitory effect upon the sympathetic, and as soon as this effect was eliminated through extirpation or affection of the pancreas, mydriasis would occur from the much weaker effect of instillation into the eye, the function of the sympathetic being increased by the absence of inhibition. From this Löwi draws the conclusion that a positive result of the test points to pancreatic disease, provided there is no hyperthyroidism and no Basedow's disease, causing overirritation of the sympathetic.

According to Meltzer, the pupil becomes dilated after instillation of adrenalin if the ganglion cervicale superius is extirpated, so that this sign would make its appearance in a number of lesions of the sympathetic nervous system.

#### CONCLUSIONS

In concluding my remarks on the diagnosis of chronic pancreatic disease, I may briefly summarize the results:

The differentiation between the various forms of chronic pancreatic affections ranks in importance at the present time below

the cardinal question as to whether or not there exists an affection of the pancreas at all in a given case.

Next it should be emphasized that in a certain number of cases it is impossible to diagnose with certainty a pancreatic lesion, even with the aid of all the methods of examination just enumerated which amount to more than a dozen. The reason is, that if the gland is only partially destroyed, or its secretory ducts are not completely occluded, the assimilation of food may remain normal, because nearly all the functions of the pancreas can be vicariously performed by other organs, and, as Keuthe correctly observed, up to now we know of no symptom that invariably occurs in pancreatic affections. However, these "silent" cases cannot be looked upon as the rule.

The routine examination will be most advantageously carried out as follows:

- (1) Ascertain any general symptoms which may point to the pancreas;

- (2) Remove directly the duodenal contents and examine for ferments.

- (3) Where the direct removal of the juice is not feasible, or where confirmatory factors are desired, apply the qualitative and quantitative methods for the demonstration of ferments in the gastric contents, urine and feces of Volhard, Schlecht, Fuld, Gross, Wohlgemuth and others.

- (4) Test for spontaneous and alimentary glycosuria and for the pancreatic reaction of Cammidge.

Thus, if the possibility of a pancreatic affection is at all considered, one may, in the majority of cases, at least make a probable diagnosis.

Finally, it should be remembered that the functional diagnosis of the pancreas, the outlines of which I have tried to roughly sketch here, is still in the initial stage of its development and will doubtless be improved upon and simplified in the near future.

It is to be hoped that also in this domain, which for so long a time has been a terra incognita, greater precision in diagnosis will pave the way to a more efficacious therapy and, above all, to surgical interference which, in these affections, has frequently proved successful.



## THE DIAGNOSIS OF TOXEMIAS DUE TO THE BACILLUS COLI COMMUNIS

By FENTON B. TURCK

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The diagnosis of intoxications due to the intestinal flora is shrouded by uncertainty and lack of knowledge of the relations between diseased conditions and the bacterial activity in the intestines.

Clinical manifestations are so variable, and pathological findings so indefinite, that no exact standard of diagnostic procedures is possible with our present knowledge.

The symptoms of nervous disorders, depressing melancholia, irritability, epileptic seizures, cyclic and periodic vomiting, arthritis, lumbago, certain forms of anemia and digestive disturbances, are often associated with increased indicanuria. As the indolic type of chronic excessive putrefaction is due to the bacillus coli group of microorganisms, the natural conclusion is that the marked indicanuria and the symptoms are the direct result of intestinal intoxication, arising from the overproduction or overactivity of the bacillus coli communis. The fact that marked indicanuria is frequently found when these symptoms are absent, and the variableness of the symptoms in different and even the same patients, demands the explanation in the different degrees of antibodies or resistance of the organism. Physical examination sheds diagnostic light only in a very indirect way.

Distention of the intestines with gas and other findings, such as atony and dilatation, are presumptive evidences that make conclusions hazardous.

The finding of products of fermentation and putrefaction is deceptive, as is the weight of bacilli (Strasburger), or the number of the bacilli in the feces.

Plating out cultures as ordinarily practiced, throws no more diagnostic light than smear preparations stained or unstained and examined by the microscope.

When we examine microorganisms from the feces, we are only

handling dead microorganisms,—only one to four per cent. are living. We have to assume that more or less dead microorganisms in the lower bowel represent a greater or less multiplication higher up in the cecum and ileum.

We must not mistake multiplicity for pathogenicity of the intestinal flora—for the same reason more or less gas formation from a specimen of feces is insufficient and possibly misleading evidence.

Now that it is evident that infections are due to the bacillus coli in both acute and chronic abdominal diseases, our attention should be directed to this microorganism by more certain diagnostic measures.

My own experiments in the last ten years, in feeding animals cultures of the bacillus coli communis for variable periods of time, and the large variety of lesions induced, according to the method and character of the experiment, seem to prove the important rôle that the bacillus coli group plays in disease. (Turck, Intl. Med. Congress, Lisbon, 1906; Jour. A.M.A., June 9, 1906; Jour. Medical Research, Feb., 1908; Zeitschr. f. Exper. Pathol. u. Therap. Vol. VII, 1910.)

Clinical and experimental work in recent literature add much to the evidence of the great importance of bacillus coli in the causation of disease. Kuttner on peptic ulcer; Trautner in rheumatism and gout, showing uric acid formation after feeding animals bacillus coli; Mahnert's clinical findings in ulcer formation after appendicitis; Neumann's observations on the virulency of bacillus coli causing diseases which pass clinically for typhoid, cholera, and dysentery; Dick's conclusions on the virulency of bacillus coli, and Metchnikoff's recent work on the relation of the same microorganism to arterial sclerosis is founded on both experimental and clinical evidence. As Dick states: "The recognition of their virulency (B. coli) is important not merely from the standpoint of diagnosis, but also from the standpoint of efficient treatment of the severe types." (British Med. Jour. Oct. 29, 1910.)

In determining the virulency of the bacillus coli in a given case, we must select our cultures not from the feces in the lower bowel, for they are mostly dead there or attenuated. The bowel from which cultures are to be taken should be first thoroughly cleaned by colonic lavage. After the bowel has been emptied, more water—200 to 300

c.c.—is introduced and then air is carefully forced through the tube with a Politzer bulb, until the cecum is slightly distended. It will soon be seen that the water introduced has reached the cecum as can be determined by percussion and succussion. Leaving the colon tube in situ, peristalsis will ensue in a short period—varying according to the conditions—and cause the cecal contents to flow out through the colon tube. Fresh material from the lower ileum may be obtained by this method.

The advantage of taking cultures by this procedure, over that by the ordinary method from the feces, is readily apparent. The fact that cultures are obtained from the area of bacterial activity is alone sufficient reason.

Cultures are not made in the usual media, but preferably either nutrient media from fetal pig or portions of the mucous membrane of any animal. This is not always essential; ordinary culture media and isolation of the bacillus coli is all that is necessary.

One-half to one c.c. of a bouillon culture of non-virulent bacillus coli can be injected into the peritoneum of a mouse or rat without any apparent effect, but if the virulency is well marked, death will follow in from six to twenty-four hours. Increasing the dose up to 10 c.c. of non-virulent *B. coli* injected, will produce no appreciable effect, but if death or marked symptoms follow, it establishes the virulency of the culture used in the test.

So constantly was virulency established by this method in my experiments, that I was led to make use of this simple method in clinical cases. The great number and variety of cases I have used it in both diagnosis and prognosis, and, as a guide, in treatment, has seemingly paralleled the experimental work.

The factors that influence virulency of the *B. coli* are diet of the patient on one hand, and the antibodies or resistance of the patient on the other. If, after correction of the diet and return of the physiological activity of the alimentary tract, the bacilli still remain virulent, we must consider the serum reaction. The heat stimulation produced by the colonic lavage given daily, greatly increases the antibodies and modifies the virulency of the *B. coli*. Hot baths produce marked changes in the virulency of the intestinal flora, due to alterations in the serum and secretions. Vaccines with auto-genous *B. coli* will alter the *B. coli* strain within two weeks in some

patients; in others a longer time will be required; and many cases fail to show any influence on the intestinal "infection."

In my experiments, I noted that injecting dead bacilli into the bowel acted as a vaccine increasing the opsonines.

Where a great proportion of the *B. coli* die in the upper colon, it has occurred to me that the dead bacilli act as an auto-vaccination. Therefore, the diet that furnishes poor pabulum for the *B. coli*, especially food digested in the upper part of the alimentary tract and absorbed there, is used as a test diet; also physical substances such as bran, agar-agar and vaseline, will cause large numbers of dead *B. coli* to appear in the bowel, not only in the large bowel but higher up. These dead bacilli in the colon become partially disintegrated and seem to act as an autogenous vaccine that reduces the virulency of the *B. coli*.

In a number of cases where symptoms of the virulency of the *B. coli* were unchanged by diet or physical treatment, small doses of thyroid substance carefully guarded, caused an entire change in the intestinal flora. The virulence of the *B. coli* disappeared, followed by complete symptomatic cures.

In a number of such cases, no evidence of myxedema, which is usually found in deficient thyroid activity, was present.

The effect of parathyroid in cases of tetany associated with intestinal infection is of very great interest. This requires more experimental and clinical work to establish the relationship of the antibodies to the *B. coli* activity.

It will be seen that in diagnosis and in prognosis of so-called toxemia of intestinal bacterial origin, account must be taken not alone of the offending group or strain of microorganisms, but of the relation of the patient's serum or cells to the intestinal flora. Merely estimating the increased numbers of microorganisms is not the diagnostic end to be achieved.

It may be even observed that when the gas bacillus group increases, while the *B. coli* group decreases in numbers, the virulency of the *B. coli* has correspondingly increased—the diagnostic point to be established.

## TECHNIC OF COLONOSCOPY

By HEINRICH STERN

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Colonoscopy is a diagnostic procedure which to this day is practised by a very few only, and these few are to the greater part surgical specialists. However, there exists no reason whatsoever why this highly important method enabling the early and definite recognition of disease in the lower intestine should not become common property of all general practitioners.

The instruments now in use do not permit inspection of the intestine beyond the lower or middle segments of the sigmoid flexure. I have devised an instrument by means of which not only sigmoidoscopy but also, under favorable circumstances, inspection of some portion of the descending colon can be effected. I have called the instrument the colonoscope, and I propose the name of colonoscopy for the inspection of the colon beyond the lowest portion of the sigmoid. Dr. Achilles Rose, the well-known authority on medical onomatology, has objected to these terms on account of their hybrid formation and suggests the designations "enteroscope" and "enteroscopy" respectively. The latter appellations, however, although etymologically correct, are entirely too general and even somewhat misleading. Years ago Leiter manufactured an "enteroscope" which was nothing more or less than an electrically lighted proctoscope, and "enteroscopy" would certainly also include the inspection of the small intestine which, of course, cannot be accomplished by instruments inserted through the rectum.

It is true that a successful colonoscopy with the sigmoidoscopes now in use is of an extremely rare occurrence. This is due to the facts that the descending colon is retained by its rather short mesocolon in connection with the posterior abdominal wall, and that the sigmoidoscope permits only a limited view of the parts situated just in front of its distal end. The descending colon is always in a more



FIG. 1.

The Author's Colonoscope

or less immovable condition; a straight instrument can either not enter it at all or cannot be advanced above its very lowest portion. Again, an instrument longer than about 35 centimeters would strike upon the left lobe of the liver or the diaphragm. The direct inspection of the lower segments of the descending colon, without resorting to an abdominal section, can only be achieved by distension of the parts with proper amounts of inflated air and an optical system admitting ocular examination of colonic portions situated beyond the distal end of the instrument and at angles to it. Such an ocular system is even necessary for the direct inspection of a portion of the sigmoid itself which has become angulated as a result of the production of adhesions (Fig. 2). The ordinary sigmoidoscope reveals, of course, nothing beyond the angulation.

#### THE COLONOSCOPE

The colonoscope is the result of a natural process of evolution, starting with Kelly's sigmoidoscope and continuing via the pneumatic instruments of Tuttle, Strauss and others. With the exception of some of the most general features, however, the colonoscope has nothing in common with its forerunners. (Fig. 1.) It consists of

1. The sheath with the lamp.
2. The obturator.
3. The double optical system.
4. The inflating apparatus.
5. The special treating plug.

*1. The Sheath with the Lamp*

The sheath consists of a German silver tube of 33 cm. (13 inches) working length and 1.5 cm. ( $\frac{5}{8}$  inch) diameter. The body-end exhibits a small, perfectly rounded off protuberance. By reason of the fact that the protuberance side of the sheath is somewhat longer than the opposite one, the tube being cut oblique with the long end toward the protuberance, the actual lumen at the body-end is 2.25 cm. ( $\frac{7}{8}$  inch). The sheath is graduated on the outside, the numbers starting at the body-end. The other end of the sheath, hereafter called the eye-end, brings the length of the tube to 35.5 cm. (14 inches). The eye-end is of greater thickness than the rest of the tube, possesses a diameter of 2.5 cm. (about 1 inch), and carries a locking and releasing device for the conical fittings of the obturator and the optical system. The function of this device is to lock and separate without jarring the sheath and the other parts while the instrument is in situ. Besides this device the eye-end of the sheath affords attachment for a novel electrical coupling with on-and-off switch, and a stopcock with short and narrow metal tube to connect with the air-inflating apparatus.

The contrivances are fastened to three sides of the eye-end, and in such a manner that the operation of one does not interfere with the working of another. There is no handle affixed to the sheath, because this would be not only useless, but a veritable hindrance in nearly every case.

The electrical lamp is loaded in a capsule with a watertight screw top and a glass window. The external part of this capsule forms the rounded-off protuberance at the one side of the body-end of the sheath. The lamps can be readily replaced by removing the screw top, which projects somewhat above the body-end of the instrument. This projection can under no circumstances injure the mucosa and is valuable as a director or guide. If properly made use of, it facilitates the introduction of the instrument into the sigmoid flexure. The front of the lamp capsule, which is directed toward the short side of the body-end of the sheath, is occupied to the greater part by the glass window. The wiring for the lamp, the light of which shows brilliantly through the capsule window, is armored in the wall of the tube. The conduit does not project

on the inside nor on the outside of the sheath. The light arrangement is a novel one altogether, permitting the employment of a double optical system. The lamp window, exposed sideways, is not as liable to become soiled by fecal material as are the lamps of all sigmoidoscopes on the market, which throw the light directly forward.

For treating the bowel, if this is not to be artificially inflated, the sheath from which the double optical system has been removed, is admirably adapted. There is absolutely nothing in the tube which can interfere with the manipulation of forceps, applicators or other sigmoidal or colonic instruments.

### *2. The Obturator*

The obturator is 39 cm. ( $15\frac{1}{2}$  inches) long and consists of (a) the obturating end-piece fitting snugly into the body-end of the sheath and having a groove on one side fitting and covering the lamp capsule to the screw top, which latter is left exposed; (b) the stem, and (c) the handle. The handle carries on one side the conical fittings for the locking and releasing device attached to the sheath. The operation of this device makes the handle almost superfluous as not even the slightest force is necessary to remove the obturator. In consequence thereof the handle consists of a knob not more than 2 cm. ( $\frac{3}{4}$  inch) long. The removal of the obturator from the sheath causes no suction whatsoever.

### *3. The Double Optical System*

The double optical system consists of (a) the closely fitting plug, exhibiting two apertures and carrying on its upper side the conical attachments for the locking and releasing device; (b) a telescopic tube with an irremovable guarded eyepiece, (c) a removable magnifying eyepiece, and (d) a circular spring, attached to the telescopic tube, to hold the latter to one side of the sheath. The removable eyepiece and the telescopic tube are engaged in the two apertures of the plug. The eyepiece of the telescope projects about 1 cm. above the removable eyepiece. This contrivance facilitates accommodation of the examiner's eye. The entire length of the telescope is 38 cm. (15 inches), it terminates just below the lamp capsule. Through the telescopic lens system one can see at right angles



to the axis of the instrument and will perceive an upright image. The telescope enables one to see "around the corner"; by its means one can inspect portions of the pelvic colon fixed by a very short mesocolon, adhesions or a tumor. (Fig. 2.) The removable eyepiece has a magnifying lens permitting the ocular examination of all that is situated straight ahead. Although the lumen of the sheath is much narrower than that of the tube of any other instrument, the area of the bowel which can be inspected at one time through the removable magnifying eyepiece is considerably larger than when ordinary sigmoidoscopes are employed. This is due not only to the oblique body-end of the sheath, but also to the position of the lamp. The fastened plug with the two eyepieces closes the eye-end of the sheath airtight and serves to retain the inflated air.

#### 4. *The Inflating Apparatus*

The inflating apparatus is of rubber and of the type obtainable everywhere. The capacity of its bulb should not exceed 75 cc. ( $2\frac{1}{2}$

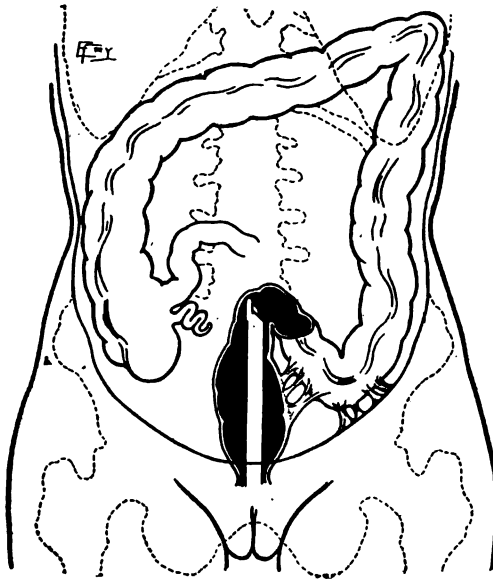


FIG. 2.

The Colonoscope in the Presence of Sigmoidal Adhesions and Angulation.

ounces), because not more than a minimum amount of air should be inflated with each compression. Although the danger of air inflation is commonly grossly exaggerated, larger amounts of inflated air call forth restlessness and griping, and may therefore defeat our purpose. The inflating bulb is connected with the short narrow metal tube leading to a stopcock either before introduction of the instrument or after the obturator has been withdrawn. The purpose of the stopcock is to retain the inflated air, to prevent injudicious inflation, and rapid escape of the air on the withdrawal of the instrument.

#### 5. *The Special Treating Plug*

This contrivance is a plug fitting tightly in the eye-end of the sheath and presents two apertures. One of the apertures is closed by a lens which brings the object at the body-end of the tube nearer the operator's eye, the other is shut by a semi-hard rubber nipple admitting instruments for application or operation while the bowel is under air distension.

#### PREPARATION OF THE PATIENT FOR COLONOSCOPY

A satisfactory ocular examination of the lower colonic segments presupposes that these parts be entirely free from fecal material. The healthy sigmoid and descending colon may be empty after a thorough normal evacuation, and can be colonoscoped shortly after this has taken place without further preparation in the majority of instances. In the cases, however, in which colonoscopy is indicated, we do not have to deal with a healthy sigmoid or descending colon as a rule, and we are confronted in well-nigh every instance with either a condition of diarrhea or constipation. The examination of diarrheal patients is especially troublesome as the fluid alvine discharges are apt to occur at any time, particularly so after the colonoscope has entered the sigmoid flexure. If colonoscopy is not imperative, that is, if it can be postponed for a few days, it is best to prepare such cases in the following manner: The patient is brought to bed and kept at rest; moderate heat, best procured by the thermophore, is applied to the abdomen for from 6 to 18 hours a day; internally belladonna, lupulin, valerian, cannabis indica

or similar agents may be administered in suitable doses; an emollient and mild astringent should be applied by sigmoidal irrigation once or twice every 24 hours. The compound infusion of sage, warmed to about 110 deg. F., of which 500 cc. are injected at the time, is well suited for this purpose. It is made according to this formula:

R. Sage .....	15 grams
Hyssop .....	15 "
Borax .....	2 "
Water, boiling.....	500 cc.

Infuse the drugs with the water, and dissolve the borax in the colature.

Beginning about 12 hours before, and continuing until the hour of examination, the camphorated tincture of opium in doses of from 2 to 15 cc. ( $\frac{1}{2}$  to 4 fluid drachms), or the deodorized tincture of opium in doses of from 0.5 to 1 cc. (8 to 15 minims), according to the severity of the diarrhea, should be administered every 2 to 4 hours.

On the other hand, if there prevails a diarrheal condition and the ocular inspection cannot be deferred, high irrigation with water of 120 deg. F. about  $1\frac{1}{2}$  hours before the examination, and the administration of 1 cc. (15 minims) of the deodorized tincture of opium about 20 minutes before the insertion of the instrument, will often suppress the watery discharges for the time being.

For patients who suffer from constipation I order castor oil from 30 to 60 cc. (1 to 2 ounces) to be taken 24 hours before colonoscopy is to be performed. This is followed by a cleansing irrigation with warm soap suds (not less than 1000 cc.) from 3 to  $2\frac{1}{2}$  hours, and the administration of from 0.5 to 1 cc. (8 to 15 minims) of the deodorized tincture of opium immediately before the examination. An enema, applied too brief a time prior to examination, is apt to interfere with the latter on account of the possibility of encountering dirty irrigation liquid containing more or less residual fecal material.

The bladder must be emptied before colonoscopy is undertaken; if necessary, catheterization should be performed. Palpation of the external parts and a careful digital examination of the lower four

inches of the rectum should in every case precede the introduction of the colonoscope.

While it is needless to expose the patient's back, chest and the lower extremities below the nether part of the thighs, it is absolutely essential that the corsets be removed and all the bands around the waist loosened. The clothing should be arranged in such a manner that the hand of the examiner or of an assistant can freely palpate the abdomen while the colonoscope is being introduced or when it has completely entered.

#### POSITION OF THE PATIENT

The knee-chest position is better adapted for colonoscopic work than any other posture. It is borne well by the patients in nearly every instance. After a prolonged examination while in this position, there arises occasionally some slight vertigo, which is, however, of a very transitory nature. The colonoscopic inspection of the parts should never last more than from 5 to 8 minutes on each occasion; if it be prolonged there will ensue, even if but small amounts of air are being inflated, a degree of intestinal distension producing genuine discomfort which may entirely frustrate the examiner's efforts.

Generally speaking, in all those cases in which the seat and the character of the pathological process cannot be determined by colonoscopy, or a specimen of the affected tissue be obtained by the aid of forceps introduced through the sheath in from 5 to 8 minutes, a second or, if necessary, third colonoscopic examination should be planned.

Even a weak patient is able to remain in the knee-chest posture for from 5 to 8 minutes, especially if the thighs, and occasionally the arms and head, are slightly supported by an attendant. The abdomen needs no support and no pressure should be exerted upon it. Kelly's contrivance for holding the patient in knee-chest posture is invaluable when an anesthetic is to be employed; the average colonoscopy neither requires anesthesia nor any special apparatus to maintain the patient in position.

The colonoscope cannot be brought into and through the sigmoid if the patient does not occupy the exact knee-chest posture,

that is, if extreme elevation of the pelvis and synchronous slight concavity of the back are not thereby attained. I strictly insist upon the posture as illustrated in Fig. 3. The patient should be on a level table resting upon the knees, head and upper part of the chest; the arms should be spread out at the sides or crossed above the head. The thighs must be upright, that is at right angles to the calves. The knees are drawn apart; care should be exercised that they neither approach each other nor that they glide from the sides of the table. The arch formed by the back should not assume a convex but a slightly concave form.

Some clinicians employ the left lateral, the Sims's position for sigmoidoscopy. I have found that a satisfactory colonoscopy without an anesthetic is not possible if the patient occupies another posture than the one described in the foregoing.

#### INTRODUCTION OF THE COLONOSCOPE

When the colonoscopic lamp has been tried and the light controller (rheostat) regulated, the conducting cord, now charged with the proper amount of current, is separated from the coupling attached to the sheath, and held by an attendant or placed in such a way that the examiner may easily reconnect it.



FIG. 3.

Position of Patient for Colonoscopy.

The instrument should then be warmed by wrapping it for a few minutes into one or two hot, sterilized towels. Obturator, body-end of the sheath as well as the anus are now coated with some lubricant which is best applied by an attendant's finger. In very rare cases, when the sphincteral region is exceedingly sensitive, the lubrication of the anus should be preceded by either the blowing in of an anesthesin dusting powder (10%) or the application of an anesthesin ointment of the same strength.

When inserting the instrument, the examiner is standing behind or at the side of the left thigh of the patient. The left hand of the examiner supports the body-end of the instrument at the moment of its insertion through the external sphincter, the knob of the obturator-stem rests upon the palm of the right hand between thumb, middle and index fingers. It is best to introduce the instrument so that the lamp is on its right side. The side of the lamp is indicated by the coupling device which is attached to the same side of the sheath. Index and middle fingers support the instrument by the coupling device, while the thumb, flexed in an obtuse or right angle,

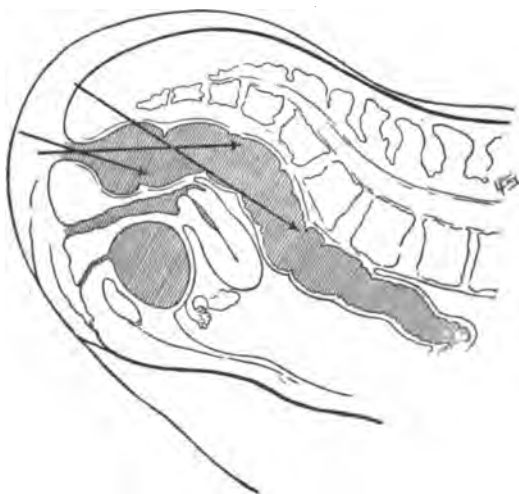


FIG. 4.

The Arrows Indicate the Direction of the Colonoscope During its Introduction.

takes hold of the top of the locking and releasing device. In this manner the instrument rests firmly in the right hand, by which it can be gently directed and pushed onward.

While passing through the sphincteral region the instrument should be held in approximately horizontal direction. (Fig. 4.) When it has entered about 10 cm. (4 inches) the obturator is released and withdrawn, a procedure which, thanks to the special device for that purpose, is not at all noticed by the patient. The double optical system, whose plug with the eyepieces closes the sheath hermetically, is now inserted and fastened in place of the obturator, electrical contact established and the lamp lighted. When this is done, the inflating apparatus is attached to the opened stop-cock and a very slight amount of air is allowed to pass through the latter. This expands the ampulla of the rectum and *the instrument from now on should be passed by sight only.*

While the right eye of the examiner inspects the ampulla through the removable (short) eyepiece which permits a view of the rectal wall situated in front of the instrument, the latter is gently carried onward, always directed by the eye, without rubbing or pressing against the mucous membrane. Folds of the bowel obscuring its lumen or intervening with the onward passage of the instrument should be straightened out by a very slight gust of air from the inflating apparatus.

The passage of the instrument through the ampulla should at first be in an entirely horizontal direction, and then with a slight upward deflection of its body-end. In order that the end of the instrument may be passed over the promontory of the sacrum it must be carried forward. The slender sheath with its oblique end is brought over this point more readily than the ordinary sigmoidoscopic tube.

The entrance into the sigmoid flexure should be looked for while the rectum is moderately distended by inflated air. The body-end of the sheath is slightly moved in all directions until the passage leading into the flexure has been discovered.

At the recto-sigmoidal juncture is situated a prominent fold of mucous membrane which is apt to partly close or to conceal the passageway onward. In case the sigmoidal opening cannot be readily made out, the instrument should be withdrawn 3 to 5 cm.

(1 to 2 inches) and the ampulla be caused to expand somewhat more by an additional whiff of air. The region in which the entrance to the flexure is supposed to be situated can thus be closely scrutinized; in more than half of the cases the dark sigmoidal cleft will be found open under these circumstances, and the instrument can be passed onward without the least difficulty. In other instances, the aperture will suddenly part and come into view after a few minutes; this ensues frequently when slight pressure has been allowed to be exerted by the lamp capsule upon the region of the sigmoidal entrance.

The opening of the flexure is mostly situated on the left, immediately after the recto-sigmoidal juncture; in about 20 per cent. of the cases I found it to the right of the juncture, and in a few instances it seemed to be located in a straight line with the axis of the rectum. The position of the sigmoid explains why the end of the instrument, as soon as it has become engaged in the lumen of the flexure, must be slightly turned toward the left in the great majority of the cases.

In a number of individuals, especially in such with long continued sigmoidal atony and constipation, a more or less developed pouch will be encountered behind and above the recto-sigmoidal juncture. The end of the instrument, after it has glided over the sacral promontory, is much more likely to be caught in this blind alley than to pass directly into the sigmoid. No force whatsoever must be employed if the free passage of the tube is interfered with. Inflation and careful inspection of the pouch will soon reveal its true nature. Under these conditions the instrument should be retracted a few centimeters and a search made lower down and forward while the ampulla is being distended as described before.

The colonoscope passes through the normal, freely movable pelvic colon without the slightest difficulty. Non-angulated sigmoidal curves offer no hindrance to the ready passage of the instrument; in reality these curves do not exist for it. The entire flexure straightens out and is drawn on the instrument when this slides through it (Fig. 5) in a similar manner as does a curled soft rubber tube when it is slipped over a rod, smaller in size and diameter than the former. Of course, the long sigmoid may thus be drawn in folds on the comparatively short instrument; this, however, does not impede the inspection of the entire mucosa when the instrument is being slowly withdrawn.



It stands to reason that the passing onward of the instrument must not be left to the sense of touch, but that it has to be guided by the eye all the time. If the instrument meets with resistance while it is engaged in the flexure, no forceful attempt to push it onward must be made. It must not be forgotten that the sigmoid, especially in women, is that part of the intestine which is more often diseased than all its other segments together, and that its original involvement may have been caused by a peritoneal inflammation with subsequent production of adhesions. The employment of any degree of force under such circumstances will not only cause pain but may call forth more or less severe injury of the mucosa and the deeper lying structures. The colonoscope must not be pushed around a curve if the latter does not yield on its own accord. It is here where the colonoscope excels over other endoscopes. A puff of air, if it does not straighten will distend the curve in every instance, and in many instances it is possible to place the instrument so that one may inspect the interior of the angulated or compressed segment through the telescopic lens system permitting at right angles

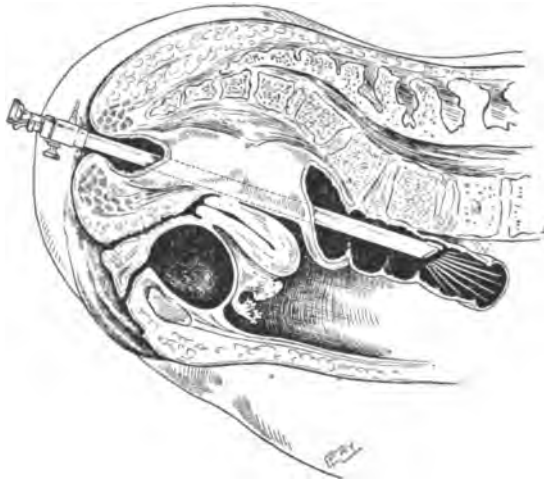


FIG. 5.

Showing Position of Colonoscope in Normal Sigmoid with Sufficiently Long Mesentery.

the view of the upright image. With some practice it is a matter of comparative ease to direct the instrument by the eye in such a manner that the telescopic lens beneath the lamp capsule will be in a straight line with the entrance to the curve or the compressed portion of the gut.

It will be noted after the instrument has been introduced 30 or 35 centimeters when, therefore, it has reached the end of the sigmoid, that the latter has more or less narrowed, in most instances forming a lip-like channel or orifice. The kink of the flexure at this place ordinarily prevents the onward passage of the older sigmoidoscopes; a little pneumatic distension, however, will not seldom permit the slender colonoscope to enter the rima flexuræ which leads into the uppermost portion of the pelvic colon. (Fig. 6.) At any rate, the rima flexuræ can be inspected through the colonoscope at right angles in many, and the descending colon, when sufficiently distended, in some instances.

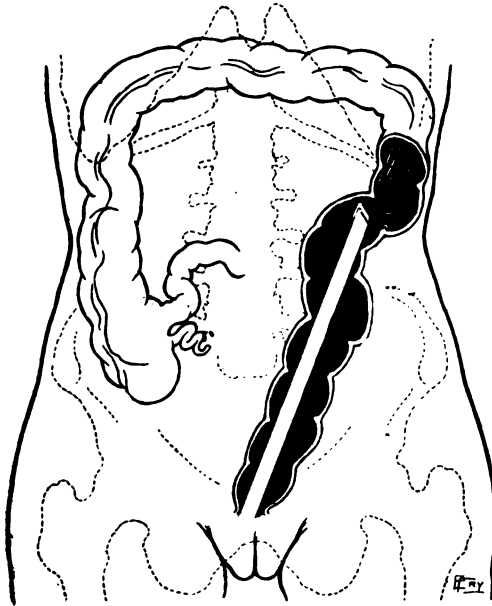


FIG. 6.

Inspection of the Rima Flexuræ and the Lower Portion of the Descending Colon.

*The most important service which colonoscopy renders is that it permits the inspection of all that portion of the gut which the instrument traverses while it is slowly withdrawn.* By means of this retrograde inspection any pathological change can be determined and located, and all those parts through which the instrument with its obturator in situ has traveled when being introduced, may be minutely examined. The distance of a morbid process from the anus may be learned from the graduation on the sheath of the instrument.

The instrument must be withdrawn very slowly, not only on account of the diagnostic inspection of the bowel but also to permit a slow escape of the inflated air, and therefore to prevent injury to the mucosa. The stopcock should be gradually opened in order that the issue of the air may go on slowly but steadily.

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## DIAGNOSIS OF PNEUMONIA

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The diagnosis of pneumonia is in many, probably in most cases, a simple matter. Given a history of exposure to cold, followed by a chill, the development of fever with pain in the chest, dyspnea, rapid, shallow breathing, irritative cough, viscid, mucoid, hemorrhagic sputum and labial herpes, pneumonia will suggest itself, and physical examination will in the majority of instances confirm the diagnosis. The certainty will be increased by demonstration of a reduction in the amount of chlorids excreted in the urine. The results of examination of the sputum have only a relative diagnostic value, inasmuch

as the micrococcus lanceolatus is a common habitant of the mouth, and, accordingly, its absence from the sputum is of more significance than its presence.

Difficulty in the recognition of pneumonia will arise principally in atypical cases, when a given symptom or physical sign preponderates over the rest, or when usual symptoms or signs are wanting or slight, or when the symptoms suggest involvement of organs other than the lungs, or when the disease develops in the course or sequence of another affection. Error here, as elsewhere, is to be avoided only by constant vigilance on the part of the clinician, with frequent resort to physical exploration; and even then a good diagnostician will occasionally slip up. Mistake is more likely to result from failure in observation than from falsity in interpretation.

Pneumonia is to be differentiated from a number of disorders with which it presents one or more symptoms or physical signs in common. A not inconsiderable number of affections set in with chill, so that this by itself has comparatively little significance. Taken in connection with other manifestations, however, it becomes more significant. It usually occurs but once, although it may be repeated, or it may take the form of chilliness or shivering. The temperature may rise gradually, or it may be elevated from the onset; in any event it is likely soon to attain a fairly high level. It continues elevated for about a week or nine days, to decline; as a rule, rather abruptly, perhaps below normal, often in conjunction with free sweating. It may now continue at the normal, or the fall may be followed by a febrile rise, to become irregular and then descend gradually.

The pain in the chest is that of the associated pleurisy, sharp and generally localized. There may even be tenderness of the overlying chest-wall. That we have to deal with an inflammation of the lung and not merely with an inflammation of the pleura will be made clear by the generally higher fever, the temperature-curve, the rusty sputa, the leukocyte-count, the physical signs. Pleurisy in its acute phase is ordinarily of briefer duration than pneumonia, and generally of milder onset and course. The temperature, as a rule, does not rise so high, while the ascent and the decline are usually gradual and unattended with perspiration or other critical discharge. Except in cases in which there is collateral hyperemia of the lung sputa are scanty or wanting, and not of the viscid rusty character of pneu-

monia. The leukocyte-count is likely to be moderate in cases of pleurisy unless there be a purulent effusion, and in this event the temperature becomes irregular, with chills, fever and sweating. Percussion-dulness develops when fluid is poured out into the pleural cavity, but then the breath-sounds are suppressed or obliterated, with diminished vocal resonance and fremitus, in contrast with the blowing breathing or crepitant râles and increased vocal resonance and fremitus of pneumonia. A copious pleural effusion may cause dilatation of the affected side of the chest, with obliteration or bulging of intercostal spaces, and if on the left side also displacement of the heart to the right.

Dyspnea, with rapid and shallow breathing, attends many conditions, febrile and afebrile, and has no pathognomonic value.

Usually the cheek corresponding to the affected lung is flushed, and the appearance may suggest erysipelas. The dark-red discoloration is not elevated or indurated or sharply delimited, nor is it subjectively the seat of a sense of burning; it does not spread to adjacent parts, nor is it followed by desquamation.

Herpes of the lips occurs in association with numerous infectious diseases, and it has only relative diagnostic significance, more especially in the differentiation of pneumonia from other diseases of the lungs.

Cough is likely to attend any irritative disorder of the respiratory tract, but the latter is mostly without the fever, the rusty sputum and the physical signs of pneumonia.

In cases in which resolution is delayed, pneumonia may be confounded with pulmonary tuberculosis, but there will be a history of an immediate antecedent, distinctive acute illness, together with the presence of the micrococcus lanceolatus and not the tubercle bacillus in the sputum, and the physical signs will generally be confined to the base or to a single lobe of one lung, rather than to the apex of one or the apices of both lungs.

Acute pneumonic tuberculosis or tuberculous pneumonia may closely simulate croupous inflammation of the lung, and the differentiation may upon the instant be impossible. The former affection, however, will, in all probability, have been preceded by a period of illness, perhaps attended with irregular fever, slight cough, scanty expectoration, impaired nutrition and progressive debility. During

the development of the disease the temperature-curve is likely to be more irregular, and there may be repeated chilliness or sweating. The demonstration of tubercle bacilli or of pneumococci respectively in the sputum would go far to clear up the diagnosis. Further, the tuberculous disease will persist at a time when the pneumonic process would have come to an end, and the physical signs indicate a progressive lesion, with breaking down of pulmonary tissue and extension to the opposite lung.

Croupous pneumonia and broncho-pneumonia require to be differentiated, and the task is at times a difficult one. While the first-named disease usually sets in abruptly, with a chill and high fever, the second develops more insidiously, often in the sequence of other disease and in debilitated old or young subjects. Croupous pneumonia is the more commonly attended with pleurisy and its accompanying pain. It is usually circumscribed in extent and confined to one lung, while broncho-pneumonia is likely to be disseminated and perhaps distributed in numerous small foci throughout both lungs. Accordingly, the percussion-dulness in croupous pneumonia is more pronounced and more massive than that of bronchopneumonia, and the vocal resonance and fremitus are more pronounced. Also the leukocyte-count will be greater. The temperature is likely to be higher and more constant in croupous pneumonia, more irregular in broncho-pneumonia. The duration of croupous pneumonia is generally shorter than that of broncho-pneumonia.

Congestion of the lungs may give rise to impairment of the pulmonary percussion-resonance, in conjunction with the presence of moist râles, but it is generally associated with or secondary to other disorders, and it is not marked by the pronounced toxic-febrile phenomena of pneumonia. In addition the physical signs, besides being bilateral and basal, are not so pronounced, while the friction-rub is likely to be wanting and the circulating leukocytes are not increased in number and the excretion of chlorids in the urine is not altered.

Pulmonary edema differs from pneumonia in its more general distribution and especially in its association with some antecedent pulmonary, circulatory or renal disorder favoring the escape of serum from the pulmonary vessels. In the presence of disease of the heart or kidneys there is likely to be also subcutaneous edema, and there may be, besides, effusion into serous cavities, together with other

symptoms of embarrassed circulation. The physical signs, while perhaps more extensive and widespread, are less pronounced than those of pneumonia, while the temperature-curve will be lower and the leukocytosis wanting.

Infarction of the lung may give rise to cough, fever, pain, rusty sputum, dulness on percussion and moist râles, but it is associated with some condition capable of giving rise to thrombosis of a pulmonary artery, and the physical signs are confined to a more or less circumscribed area. Moreover, there will be wanting the leukocytosis and the urinary changes of pneumonia.

Abscess of the lung, gangrene of the lung, bronchiectasis, actinomycosis of the lung, syphilis of the lung, malignant diseases of the lung are essentially established and as a rule secondary or associated disorders, and their differentiation will depend upon a recognition of this fact, together with a careful consideration of the phenomena distinctive of each.

Both abscess and gangrene of the lung may arise from secondary infection with pyogenic or putrefactive bacteria respectively in the course of other diseases of the lungs, or as a result of embolism of a pulmonary artery. In addition abscess may be developed by extension from adjacent disease, for examples empyema or abscess of the liver. The lesions may be single or multiple. Both disorders give rise to physical signs of excavation of the lungs, with copious and characteristic purulent or fetid expectoration, containing pulmonary and elastic tissue. There is wanting the extensive percussion dulness, with crepitation, blowing breathing and increased vocal resonance and fremitus, and the temperature-curve will be irregular and fluctuating, and probably associated with chills and sweating, while the duration is longer and emaciation and cachexia develop.

Bronchiectasis also may be single or multiple, and, in addition to yielding physical signs of dilatation of a bronchial tube, it is attended with paroxysms of cough resulting in profuse muco-purulent expectoration having a stale odor, with intervals of quiescence. The condition is one of long standing and it will have been preceded by some recognized causative disorder.

The diagnosis of actinomycosis of the lung will depend upon a knowledge that a focus of the disease exists in some other portion of the body also, and especially upon the presence in the sputum of

the characteristic granules and the demonstration microscopically of the threads and clubs of the ray-fungus.

Syphilis probably never invades the lung exclusively, and its manifestations may appear on one or both sides. It may give rise to an interstitial hyperplasia or to the formation of gummata. The recognition of the disease must be based on a knowledge or evidence of an initial lesion and the presence of lesions in other situations. Of course a positive serum complement reaction would be confirmatory.

Malignant disease of the lung also could be suspected only from a knowledge of the presence of primary or secondary deposits elsewhere, or possibly from the detection of characteristic cytologic elements in the sputum.

Acute pneumonia may require differentiation from a pericardial effusion—exudate or transudate. The physical signs induced by the former are related to either lung, while those of the latter are confined to the region of the heart. The percussion-dulness of the one condition is associated with blowing breathing and crepitation and bronchophony and preservation of normal heart-sounds, while that of the other will be accompanied by suppression of the breath-sounds in the affected area, with muffling of the heart-sounds. In the presence of pneumonia the respiration is greatly accelerated, in that of pericardial effusion the pulse. If the effusion be part of a pericarditis, friction-sounds are quite certain to be present at some stage.

Pneumonia may be attended with marked meningeal symptoms, and meningitis due to the pneumococcus may even be a complication. The differentiation is to be made from the physical signs of inflammation of the lung.

Pneumonia and typhoid fever are not likely to be confounded at the height of either disease. The rapid respiration, the rusty sputum, the leukocytosis, the physical signs will sufficiently distinguish the one, while the disproportionately slow pulse, the leukopenia, the roseola, the enlarged spleen, the serum agglutination reaction will clearly establish the other. Atypical evolution of pneumonia, especially in a community in which typhoid fever is prevalent, may for a time occasion doubt, but this will be resolved by the development of the physical signs and by the leukocyte-count. The



cough that often attends the onset of typhoid fever may suggest the inception of pneumonia, but the absence of characteristic physical signs, as well as the leukocyte-count, will aid in excluding inflammation of the lung, while the appearance of rose-spots and the development of the serum agglutination reaction will establish the diagnosis of typhoid fever. It should, however, be borne in mind that occasionally the two diseases are associated, and in fact inflammation of the lung due to the typhoid bacillus has been observed. Under such circumstances the diagnosis will have to be made from the presence of symptoms and physical signs of both disorders.

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### DIFFERENTIAL DIAGNOSIS BETWEEN TUMORS LOCATED IN THE COLON AND TUMORS LOCATED IN THE MESOCOLON

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The differential diagnosis between tumors located in the colon and tumors located in the mesocolon is connected with great difficulties, and generally it is not made until the patient is operated upon or at the autopsy table. Almost all the tumors of the colon are malignant and always present a very serious condition on account of the resulting constriction of the lumen of the gut, while the tumors of the mesocolon, except in very rare instances, are always of benign nature (lipomata and fibromata); therefore the differential diagnosis between the two pathological conditions has a great practical importance as regards the prognosis. Moreover, tumors which are very often found in the mesocolon are cysts which, although of benign nature, very rapidly attain, if not operated upon early, such a size and produce such a mass of adhesions, as to render them inoperable; hence the importance of early diagnosis.

The principle on which I base the differential diagnosis is, that by inflating the colon (if the tumor be located in the gut and does not invade the mesocolon) it will be very movable, so that on percussion it will be found against the abdominal wall and a tympanitic sound will be obtained along its entire length; when the tumor is reached, the thickening of the intestinal wall, caused by the presence of the tumor, will give a different sound and thus, in some cases, it will even be possible to form an idea as to the size of the tumor. When the tumor is located in the mesocolon, this will be shortened and adhesions will be produced, so that when the colon is inflated, the part of the gut corresponding to the tumor will be kept down, an empty space between the colon and the abdominal wall will result which will be filled by the small intestine, and there, on percussion, one will obtain a sound which will be like the sound obtained over the rest of the small intestine. The technic consists in giving the patient a purgative, then washing the colon well with a high enema, and finally distending it with as much air as possible without hurting the patient. Of course, one must be keen to distinguish the different sounds.

I have been able to differentiate the location of the tumor in two cases, the diagnosis having been found correct on the operating table. I hope therefore that this method will help others in making the differential diagnosis between tumors of the colon and tumors of the mesocolon.

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## THE DUODENAL TUBE

By M. GROSS

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The method to obtain duodenal juice from the human being by means of the duodenal tube devised by me (1) is, according to the experience I have gathered during the 18 months (2) since I have experimented with the tube, the best and shortest way to obtain pancreatic juice.

The apparatus, as described in the cited literature, consists of a small silver-plated lead ball, perforated in many places and attached to a rubber tube which will not readily collapse, having a diameter of about 5 mm., a length of 125 cm. and being marked in divisions of 10 cm., furthermore, a receptacle for the aspirated fluid, and a mouth-piece for aspiration if done by mouth, as I invariably practise it. This mouth-piece, however, may be replaced by an aspiration bulb which can be easily attached. The diameter of Einhorn's pump—unless he has thought well to modify it—is so small (about 2 mm.), and the tube is so stiff, that aspiration can only be carried out with considerable difficulty; and the difficulty is still greater if liquid is to be conveyed through it to the duodenum, as he has latterly tried to do. Owing to the narrow lumen and the stiff material of the tube, only minute quantities of liquid can be slowly introduced at a time, and under relatively high pressure.

It is evident from these explanations that, for the duodenal tube to serve its purpose, it should meet the following requirements:

It should reach the intended place (duodenum) (1) by the shortest route; (2) in the shortest time; (3) without much inconvenience or any injury to the patient; (4) with the smallest possible interference with gastric function.

It is impossible to avoid interference with gastric function altogether. If we succeed, however, in using it merely as an organ of transit, a great step has been taken toward fulfilling the above postulates.

Leaving the propulsion of the tube entirely to the stomach (3) aggravates and prolongs its introduction considerably, and in a number of cases (dilatations, etc.) renders it even problematical.

On the other hand, the tube devised by me, and especially its method of introduction, enables us to reach the pylorus by the shortest possible route (small curvature), obviating to a very considerable extent interference with the action of the stomach.

The technic of introduction of the tube is as follows:

The patient, in a sitting posture, swallows the well salivated ball down to the mark 45 cm. of the tube—a few centimeters beyond the cardia—then lies down on his right side, which causes the metal ball to gravitate toward the pylorus which it enters in due course

drawing the tube with it to about mark 60 cm. (pylorus). Further progress is assisted by very gently pushing the tube in, *rather following* the *pull* of the ball, until mark 70-75 cm. has been reached. About 20-30 minutes later, the first aspiration is made, and it will be possible already then to obtain duodenal juice, which, however, from this part is still mixed with gastric contents.

After a further lapse of 10-15 minutes it will, in nearly all cases, be possible to aspirate characteristic duodenal juice.

With the tube in position in the duodenum, all further steps can also be carried out with the patient in the sitting posture. Depths beyond 80 cm. can be more rapidly reached in this position.

There is no reason whatever why it should be impossible to reach any desired depth of the intestinal tract. In one of my very first successful experiments the tube could be followed deep down in the intestine, as was shown by the radiograph (4), the mark of the tube reading 125 cm. Here I was able to aspirate what I believe to have been succus entericus, which had a turbid, milky appearance and was of a light green hue. Blue litmus paper here began to show a slightly red reaction. Retraction of the tube and renewed aspiration reestablished the alkaline findings.

For an ordinary examination the introduction to 70 or 80 cm. will be sufficient, but this, of course, does not mean that the small ball is situated exactly 15 or 20 cm. beyond the pyloric ring, because part of the tube will always hang within the stomach.

The examinations we have so far made were carried out half an hour after the ingestion of a test breakfast (250 c.c. of milk half diluted with water).

Ingestion of liquids, too, excites considerable secretion of the duodenal mucosa.

When there is stagnation in the stomach, the latter should, of course, first be cleansed of all food remnants before the introduction of the duodenal tube, in order to prevent the small holes of the ball getting clogged.

In the course of my investigations of the duodenal contents, I have obtained in the aspirated liquid of cases clinically pointing to duodenal ulcer, minute, microscopically visible blood particles which emanated from the duodenum. Further investigations in connection with these findings are still under way and will be referred to

in detail at another time. The blood, even if standing by itself, provided it can be regularly demonstrated in the course of further investigations, would point to the presence of duodenal ulcer.

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## General Retrospect

### DIAGNOSIS OF BONE DISEASE

(A REVIEW OF RECENT LITERATURE)

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- HORWITZ, A. E.—Differential points in the character of bone lesions in tuberculosis, osteomyelitis, rickets and syphilis. (*Interst. Med. Jour.*, July, 1910.)
- MATHEWS, F. S.—Myeloma of long bones. (*Annals of Surg.*, Sept., 1910.)

In diagnosing the various bone lesions we must make use of all available data. The history should be carefully elicited, especially in

suspected syphilitic cases, and the physical examination should be thorough. A point which may be of considerable assistance is that brought out by *Dawbarn*. He determines whether there is any softening of a bone by inserting a tempered needle into the suspected area and into a corresponding point of the corresponding bone of the other side. By comparing the resistance offered by the needle by the two bones he determines whether there is any softening. This softening shows a decalcification, one of the earliest signs of bone malignancy. Inflammatory processes, rickets, scurvy and osteomalacia may all show a softening, but their clinical course and history are different. The sine qua non, however, in diagnosis of bone disease is the use of the Röntgen ray. Its importance in the recognition of fractures is well established. Its application is especially advisable in all injuries to the extremities of children. *Cones* makes a strong plea for a skiagraph in the subperiosteal or linear fracture in which all the cardinal symptoms may be absent. *Pochhammer* reports an interesting case of divulsion of the trochanter minor. In this condition the patient was able to move the thigh in all directions, but flexion of the thigh was impossible without simultaneous flexion at the knee together with abduction and external rotation or adduction and internal rotation. The tensor vaginæ femoris and rectus muscles could be seen becoming tense, but the ilio-psoas did not come into play. At the time the first X-ray picture was taken the leg was in outward rotation. No fracture was shown. Later a skiagraph taken with the leg rotated inwardly disclosed the fracture.

Other bone lesions, whether inflammatory or malignant, rest for diagnosis almost solely upon the X-ray findings and the proper interpretation of the latter. Acute purulent osteomyelitis, occurring as it does mostly in children, has to be differentiated from rheumatism, scurvy, rickets, tuberculosis or hereditary syphilis. The history may assist in the differentiation, but the skiagraph will show the characteristic features. In acute osteomyelitis the periosteum is usually seen bulging and appears as a light shadow surrounding the darker shadow representing the thickened cortex (*Beck*). The latter shows a very regular line. The epiphyseal line appears thickened and filled in and the shadow around the line is very dense. If there is an abscess in the marrow there will be one or more definite shadows shown in it. In chronic osteomyelitis the bone structures show up less distinctly, and quite often there is an accompanying atrophy below the point of infection. (*Rotch and George*.) In rickets the bones usually show thickening on the side of the concavity of the bowed limb and an enlarged epiphysis. Bones in congenital syphilis are usually thickened on both sides of the cortex, but the original shape of the bone is maintained (*Horwitz*). The epiphysis also shows large dark shadows representing ossified areas, and the dia-

physis reveals light areas of insufficient calcareous deposits. The synostosis shows a marked dark line of abundant calcareous deposit (*Beck*).

In tuberculosis the medulla and cortex become merged into one mass of soft bone of irregular contour, as shown by the translucency. The epiphysis becomes square (*Horwitz*). Instead of the reactive inflammation or consolidation of bone about the inflammatory focus, there is a rarefaction of bone as seen by a light shadow (*Ware*). The soft parts, however, react as indicated by their thickening. When calcareous degeneration takes place, dark-shaded foci appear. (*Beck*.) Eroded and displaced cartilages can be seen.

The characteristic feature of syphilis is the circumferential involvement of the periosteum, as evidenced by the shadow. The productive character of the bone lesion is manifest from the dense shadow of the cortex. Advanced gummata which cause absorption of the bone appear as lighter shadows, surrounded by dense shadows of consolidation.

Of the new growths involving bone myeloma (sarcoma) is the most frequent. This may be multiple or single. The multiple form is more frequent in the aged and involves the flat bones; the single type is usually seen in the young and their most frequent site is in an extremity. The growths originate in the diaphysis near the epiphysis. Even in the later stages when the epiphysis is involved there is very little tendency to perforate into the joint. (*Mathews*.) Albumose is usually encountered in the urine. The skiagraph of a myeloma reveals a translucent area, a very irregular outline with fine spiculated trabeculae radiating from the surface (*Beck*). The soft myelomas show almost a complete absence of osseous tissue, whereas the hard myelomas show a greater amount of osseous tissue. Sarcoma may simulate chronic osteomyelitis, myositis ossificans and benign bone cysts. The cortex in osteomyelitis is nearly normal in outline, and only one side is involved which is of a globular or spindle shape. Myositis ossificans shows a well defined line of demarkation between the normal bone and the tumor, and the mass is of a much harder consistency, as it contains more osseous tissue than sarcoma (*Coley*). In case of doubt a frozen section should be made.

The edges of a bone cyst are very definite and show a thinning. The translucency is more marked and uniform throughout, and appears to start in the center of the bone expanding equally in all directions (*Robert and Morgan*).

Vascular tumors are usually considered to be of malignant character, though *Le Denter* reports nine cases of pulsating bone tumors of which the histological examination failed to reveal any malignancy.



A bone condition that is most interesting due to its infrequency is that of echinococcus cyst. The diagnosis rests solely upon the radiograph. The bone maintains its shape, shows absolutely no reactive inflammation and all that remains is a very thin shell of bone. The cyst has an irregular margin and exhibits a diffuse translucency (*Reich*).

A condition not heretofore described is an edema of the periosteum of angioneurotic origin. It occurs usually after the thirtieth year, at irregular intervals, and is usually situated on the external surface of the thorax. Pain is not always present, though tenderness can usually be elicited. The swelling is circumscribed and of a doughy character (*Heinrich Stern*).

## Progress of Diagnosis and Prognosis

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### GENERAL METHODS OF EXAMINATION—SYSTEMIC AFFECTIONS—DISORDERS OF GENERAL METABOLISM

**A new Reagent for Bile Pigment**—RICCI, *Gazzetta degli Ospedali*, 1910, No. 109.

Author found that the reagent described by Bonanno in 1907 is much more sensitive for the detection of bile pigment than the usual reagents, especially those of Gm $\acute{e}$ lin, Mar $\acute{e}$ chal and Krokiewicz. The reagent is prepared as follows: into a bottle with glass stopper is placed sodium nitrate (20 centigrams) and 10 c.c. HCl; the bottle is then closed. A saturated solution is thus obtained; it is dirty-yellow, and fumes of nitric acid and chlorine escape from it. The reagent has to be renewed from time to time as it is apt to lose its strength. One or more drops of the reagent when added to icteric urine causes emerald-green coloration at first of that portion which is touched by the reagent; when the test tube is shaken the coloration is imparted to the entire urine. The green color is permanent; it cannot be obtained when both ingredients of the reagent are added successively to the urine. The reaction is specific; urobilin, indican, acetone, glucose as well as medicinal agents like phenol, iodine, bromine and salicylic acid do not yield it. The presence of these substances in the urine does not disturb the reaction. The reaction occurs by the oxidation of bilirubin into biliverdin; this oxidation is produced in part by the nitric acid, in part by the chlorine.

ZIMMER.

**Reaction in the Urine of Breast-fed Children**—S. ENGEL and L. TURNAU, *Berliner klin. Wochenschr.*, Jan. 2, 1911.

About 1 c.c. of a 2% solution of silver nitrate is added to 5 c.c. unacidulated urine. The mixture is set aside for about 10 minutes. If there occurs rapid black discoloration of the precipitate the urine comes undoubtedly from a breast-fed infant. If quicker results are wanted the urine and reagent should be boiled. If the precipitate remains white or is but slightly discolored, the urine is certainly not derived from a breast-fed child. If the discoloration becomes somewhat intense after boiling the test should be repeated by setting the urine aside for 10 minutes at room temperature.

MILL.

**Morphologic Blood Changes in Struma and Morbus Basedowii**—U. CARPI, Berliner klin. Wochenschr., Nov. 7, 1910.

There is no characteristic and constant blood picture in morbus Basedowii which is of positive diagnostic significance. Lymphocytosis is of frequent occurrence in Basedow's disease, but also occurs in simple struma. MILL.

**Blood Examinations in Basedow's Disease**—E. H. v. LIER, Beiträge z. klin. Chirurgie, Vol. LXIX., No. 2.

The results of the examination of the blood of 76 cases of Basedow's disease. The number of red cells remains unchanged and the total number of leucocytes continues to be normal. The proportion of lymphocytes and mononuclear leucocytes to the polynuclear neutrophils is changed; there occurs an increase of lymphocytes and mononuclear leucocytes and a decrease of polynuclear neutrophils. The more pronounced the disproportion between lymphocytosis and leucopenia, the more unfavorable is the prognosis as regards the affection and an operation. The blood picture becomes again normal in cases successfully operated upon. STEIN.

**Hypothyroidism in Childhood**—W. STOELTZNER, Jahrbuch f. Kinderheilkunde, Vol. LXXII., No. 2.

Author draws attention to the not infrequent occurrence of abortive forms of myxedema in children, and is of the opinion that the "status pastus" is a manifestation of hypothyroidism. MILL.

**Psychogenous Changeability of Blood Pressure and its Practical Importance**—P. SCHRUMPF, Deutsche med. Wochenschr., Dec. 22, 1910.

One should not conclude that there exists a permanent pathologic increase of bloodpressure until the possibility of a purely psychogenous transitory hypertonicity can be positively excluded. Psychogenous increase of bloodpressure affects almost exclusively the systolic pressure. It supervenes suddenly in almost every case as a concomitant of a psychic affect. This tendency of the bloodpressure to increase temporarily after psychic stimulation is found in almost every individual, especially, however, in those of nervous temperament possessing psychic and intellectual superiority. MILL.

**Disease of the Salivary Glands and Myopathia**—S. SCHÖNBORN and K. BECK, Mitteilungen a. d. Grenzgebieten d. Medizin u. Chirurgie, 1910, No. 3.

Report of a case of a man who was affected with a slowly

progressing, symmetrical disease of the large salivary glands. Synchronously therewith occurred increase of volume of musculature, especially of the floor of the mouth, the tongue, upper arms and shoulders without corresponding increase of local muscle force. Patient suffered, on the contrary, from general weakness and cachexia. Authors are of the opinion that the myopathic state may be of toxic origin, and that the internal secretion of the diseased salivary glands may be in all probability at the bottom of it.

MILL.

**Anemic Respiratory Disturbances**—L. HOFBAUR, Wiener med. Wochenschr., Dec. 12, 1910.

In cases of grave anemia there may occasionally supervene respiratory disturbances in the form of deepened breathing on the one hand and of respiratory intermissions on the other. These disturbances of external respiration are not the consequences of the anemic state as such, but are caused by the diminution of blood-pressure, which is present in anemia.

MILL.

**Lipemia in Diabetes**—G. KLEMPERER, Münchener med. Wochenschr., Nov. 22, 1910.

Lipemia occurs always in grave cases of diabetes. Its etiology is as yet unknown. Author never found lipemia in 42 mild cases of diabetes, while he could demonstrate it forty-three times in 50 cases of grave diabetes with acidosis. The appearance of lipemia is of prognostic significance, as is evinced by 21 diabetics who have died in coma, among whom lipemia had supervened in 17 cases, the 4 remaining cases, in whom lipemia was not encountered, died of complications rather than the coma. Lipemia may be recognized by examining the background of the eye; its presence is most readily recognized by allowing a drop of blood to rise in the capillary tube when in cases of lipemia the serum will appear turbid. The ethereal extract of lipemic blood serum does not consist of fat, but of cholesterin and little fat. While the ethereal extract of 100 c.c. normal blood serum amounts to 0.6 gram, it occurs in larger quantity in lipemia. In diabetic coma the ethereal extract may increase to 2 grams; in one instance it amounted to 26 grams. Lipemia is in reality a lipoidemia.

MILL.

**Diabetic Lipemia**—G. KLEMPERER, Deutsche med. Wochenschr., Dec. 22, 1910.

The blood in grave cases of diabetes appears mostly of milky quality and separates a turbid-milky serum. The phenomenon can be frequently noted in the background of the eye where the retinal vessels exhibit a milky-white appearance. The blood in diabetic lipemia does not contain pure fat, but much cholesterin and lecithin.

For the reason that in grave diabetes there ensues augmented cellular catabolism and renewed anabolism we can demonstrate increased amounts of lipoids in the circulating blood. During catabolism the lipoids enter the blood, from which they are again deposited in the tissues for reconstruction of the cells. MILL.

**Determination of Diastase in the Urine; its Relation to Nephritis and Diabetes Mellitus**—O. J. WYNHAUSEN, *Berliner klin. Wochenschr.*, Nov. 14, 1910.

If large amounts of diastase are encountered (above 50 units) in the urine, the case is very likely one of mild diabetes; however, if small amounts of diastase (less than 30 or even less than 20 units) are met with, and if there is no concurrent nephritis, one may assume that the urine comes from a case of grave diabetes. It seems not improbable that the function of the pancreas has something to do with this phenomenon. MILL.

**Lordotic Albuminuria**—A. LURY, *Jahrbuch f. Kinderheilkunde*, Vol. LXXI, 1910, p. 705.

Author maintains that the production of lordotic albuminuria depends upon an abnormal mobility of the kidneys. By fixation of the kidneys (pressure with the hands of the examiner upon the loins of the patient in lordotic incline), the albumin excretion may be entirely or partially subdued. MILL.

**Certain Aspects of Rhinolaryngology and their Relation to General Medicine**—H. ARROWSMITH, *N. Y. Med. Jour.*, Dec. 17, 1910.

Author has the following to say anent his observation of many thousand cases of tonsillar hypertrophy and disease: (1) Pure hypertrophy of the faucial tonsil is essentially a phenomenon of early life; except in rare instances, it is rather protective than pathologic and even a moderate number of attacks of acute amygdalitis rather substantiate than vitiate the presumption of this protective function. (2) The cause of this hypertrophy is very often disease of the pharyngeal tonsil. (3) Up to the age of puberty, at least, a moderate pure hypertrophy should be respected as an evidence of some important functional activity, probably protective in nature. WESTERN.

**Pathology of Hematomata**—G. R. WARD, *British Med. Jour.*, Nov. 5, 1910.

In hematomata the blood is fluid, sometimes viscid, never coagulated. Rouleaux formation is absent or very defective. The leucocytes show fragmentation of the nuclei; crenation is absent. SACHS.

## INFECTIOUS DISEASES

**Testing of Liver Function with Levulose in Infectious Diseases—W. SCHMIDT,** *Deutsches Archiv f. klin. Medizin*, Vol. C, Nos. 3 and 4.

Infectious diseases or toxins in the body occasion decrease of tolerance for levulose, decrease of liver glycogen after glycogen ingestion, and urobilinuria. Simple temperature elevation without infection does not call forth diminished tolerance for levulose in animals. The levulose test and the demonstration of urobilinuria in liver disease are without value as diagnostic means if fever (infection) is concurring, as in the presence of the latter there may exist diminished tolerance for levulose and intense urobilinuria without demonstrable anatomical alterations in the liver.

WESTERN.

**Diagnostic Use of the Complement-Fixation Method—A. WASSERMANN,** *British Med. Jour.*, Nov. 5, 1910.

Author states that none of the present modifications of his original complement-fixation method for the diagnosis of syphilis are to be recommended for practice. This particularly applies to Noguchi's modification, as it suffers like the other methods from the fault that it is too delicate, i.e., it gives reaction with the serum of patients having diseases other than syphilis, while the original method shows no reaction in these cases.

SACHS.

**Conservative Utilization of the Wassermann Reaction—D. M. KAPLAN,** *Jour. A. M. A.*, Dec. 3, 1910.

For diagnostic and therapeutic purposes the laboratory report should always be collated with clinical findings. Negative reports are of value in therapy. Treatment should be stopped for 4 to 6 months after patient becomes clinically and serologically normal, and at the end of this period the test should be repeated. All patients cured of syphilis ought to have for preventive purposes a test performed twice a year. Some patients who have had syphilis never lose the positive reaction in spite of any therapy. A negative report obtained on a serum from a suspicious case should defer treatment until the course of the disease decides the etiology, provided there is no danger in delaying treatment. With a positive report one must not lose sight of the possibility of another disease being present besides syphilis. In author's experience advanced scleroderma and old leprosy are more positive than old syphilis, quantitatively and qualitatively. He obtained positive reactions in active tabes in 88 per cent. and in quiescent tabes in 44 per cent. of the cases.

WESTERN.

**The Practical Usefulness of the Wassermann Reaction with especial Reference to Stern's Modification**—F. HAYN and A. SCHMITT, *Münchener med. Wochenschr.*, Dec. 6, 1910.

The Wassermann reaction is an important adjuvant in the diagnosis of syphilis. Early, energetic mercurial treatment produces more readily a reverse of a positive reaction than is occasioned when treatment is instituted later or not at all. A permanent negative reaction is to be procured by chronic-intermittent antisyphilitic treatment. As yet, a prognosis cannot be offered by means of the Wassermann reaction. The test should be performed only by trained workers in well-furnished laboratories, as the reliability of the results depends upon its exact execution and time-consuming control tests. The test cannot be performed by the practising physician. The result of the test should be employed with caution when the clinical and serologic findings do not quite correspond; a positive reaction does not furnish a topical diagnosis, but points only to the probable presence of constitutional syphilis, while a negative result does not exclude the presence of syphilitic infection. Stern's modification cannot replace the Wassermann reaction, as it should be employed together with the latter.

MILL.

**A new Serologic Method for the Diagnosis of Syphilis**—G. SEIFFERT, *Deutsche med. Wochenschr.*, Dec. 15, 1910.

Author's investigations were made by means of a modified epiphanin reaction (Weichardt). Syphilis is indicated by red discoloration of phenolphthalein. A specific component contained in the syphilitic liver is necessary for the reaction. Of 75 seras which were examined according to Wassermann and this new procedure, 43 reacted positive, 21 negative. The results in 11 sera were not uniform with the two methods of examination, but the new procedure always gave positive results when the presence of syphilis was clinically certain. When the reaction was positive syphilis was invariably present clinically. It appears that the reaction is specific for syphilis.

MILL.

**Finding the Spirochætæ Pallida with special Reference to the India Ink Method**—J. S. COHN, *Interstate Med. Jour.*, Jan., 1911

Author's personal experience has been practically limited to the India ink method. He found that pictures obtained by this method and by the various stains, could not be compared in definiteness. About 400 examinations were made by this method. The picture presented by the India ink method is absolutely sharp. In every case, except those which had been previously submitted to a long mercurial treatment, the spirochætæ were easily and quickly found.

There is still some doubt about the value of the India ink method for the demonstration of the *spirochaeta pallida* in scrapings made from syphilitic tissue, such as fetal liver or placenta.

WESTERN.

**The Identification of the Tubercle Bacilli by Means of Antiformin—**

D. FELBERBAUM, N. Y. Med. Jour., Jan. 14, 1911.

A mixture of Javelle water and sodium hydroxide in concentrated solution, according to Uhlenhuth, has the property of dissolving all organic substances within a short time and destroying all bacteria, save those that are acid fast. A from 15 to 30 per cent. solution is made and added in about equal proportion to the entire quantity of sputum obtained. Author has obtained best results with a 30 per cent. solution. The mixture is stirred with a sterile rod, and the sputum is dissolved in a second or two. The solution may be hastened by incubating for a short time at 37.5 deg. C., or by the addition of a little more antiformin, the proprietary name for the solution. The next step is to centrifuge the resulting fluid. For this purpose it is necessary to employ a high speed centrifuge with a minimum of 3000 revolutions, and the type with large tubes is best, so that all or most of the fluid is used. Centrifuging is continued for at least 15 minutes; a small amount of a dirty-looking sediment results. The supernatant fluid is poured off, the sediment clinging to the bottom, and normal saline solution is added, the quantity of saline exactly replacing the antiformin. After thoroughly shaking up the sediment, again centrifuge for 15 minutes; decant off the saline solution, and the entire washed sediment is spread on a glass slide. It is surprising what little residue a large quantity of sputum will leave. The advantage of this is apparent, all the tubercle bacilli contained in the given specimen will be obtained on one slide and consequently will be more numerous than with the ordinary method. At this stage one of the great difficulties of the method is the danger of the film becoming detached. Author, in order to avoid this, dries slowly over a small flame. During further manipulation care must be taken in washing. This is best done by having tap water running slowly through a tube into a beaker. The specimens are stained in the usual manner with carbol fuchsin; decolorized with nitric acid and alcohol, and counterstained with methylene blue. The final drying is completed by gently blotting off the excess of water and drying again slowly in a small flame. Usually if positive, in the first field will be found clumps of bacilli in a blue amorphous background. The bacilli stain about as well as in the ordinary way, but no knowledge of the accompanying bacteria or cellular elements can be obtained. To determine their presence it is well to make first a plain smear, and in all those that are negative to run through with the



antiformin process. The time consumed is not very great when the work is systematized; as many as a dozen of sputa can be easily examined in 2 or 3 hours. The antiformin preparations, as a rule, show such large numbers of tubercle bacilli that they look frequently like pure cultures, even in cases where only a few could be found after a prolonged search with the Ziehl-Neelson method. Author draws these conclusions: the Ziehl-Neelson method, if carefully carried out, gives such high percentages of positive results, that it is sufficient for ordinary routine clinical work. The antiformin process is destined to take a permanent place in laboratory methods, inasmuch as it is the best means of concentrating the tubercle bacilli. It should be applied to all doubtful cases. To determine the presence of tubercle bacilli in pathologic exudate other than sputum it is the best method at our disposal.

WESTERN.

**Relation of the Cutaneous to the Subcutaneous Tuberculin Test—T. DEW. GORDON, Physician and Surgeon, 1910, No. 8.**

Author advances the following conclusions: the skin tests in adults should not be discarded as an index to tuberculin sensitiveness. In his hands it has given results which have agreed very closely with those obtained by the subcutaneous test, and it can be given in many cases in which a subcutaneous test may not be convenient or advisable. The use of different dilutions greatly improves the accuracy of the test; but no definite dilution of the tuberculin will differentiate active from latent or healed processes, and the test cannot replace other methods of study and diagnosis. Much delay in using low initial subcutaneous doses may be avoided by using a preliminary skin test.

WESTERN.

**Origin and Significance of Tuberculous Sweats—G. HEIM, Zeitschr. f. Tuberkulose, Vol. XVI., No. 4.**

The products of retrograde tissue metamorphosis and the toxins of the bacilli give rise to sweating by stimulation of the sweat glands, especially by direct or reflex irritation of the sweat centers. It appears that the noxious substances are eliminated by the sweating process. The poisonous material cannot be demonstrated with certainty in the sweat.

FRY.

**Tuberculous Articular Rheumatism—E. MELCHIOR, Mitteilungen a. d. Grenzgebieten d. Medizin u. Chirurgie, 1910, No. 3.**

Description of a case of tuberculous articular rheumatism, the diagnosis of which author was able to verify at autopsy. Multiple acute articular swellings developed in a very sick girl 12 days after

exarticulation of the tuberculous lower jaw. The articular phenomena had nearly completely disappeared after 3 months. Necropsy showed tuberculous affection of the synovial membranes of all involved joints, which exhibited normal or nearly normal appearance macroscopically.

MILL.

**Blood Contamination in Organismal Diseases**—S. J. ROSS, Practitioner (London), Dec., 1910.

Author cites three cases of septic infection of the blood, following respectively a case of septic tonsillitis, pneumonia, and purulent otitis media. The pyemia developed a few days to a week after the apparent cure of the disease. Author is of the opinion that this condition of latent pyemia may account for those obscure and sometimes fatal illnesses which from time to time occur and the nature of which is not understood.

SACHS.

**Sepsis due to Friedländer's Bacillus**—F. ROLLY, Münchener med. Wochenschr., Jan. 3, 1911.

Friedländer's bacillus does not, as a rule, play an important rôle in the pathology of local or general infections. Diseases produced by it are rare. As a cause of local processes the bacillus of Friedländer must be considered in diseases of the lungs, nose, mouth, trachea, middle ear, intestinal canal, urogenital tract, and occasionally also in affections of the liver and biliary passages. In all these places it may sometimes give occasion to inflammation which may turn into suppuration, and a general infection may, under certain conditions, result therefrom. These general infections, according to the literature, seem to occur very rarely. Author reports four cases of general infection with Friedländer's bacillus. He concludes that it is not possible to diagnose during life "Friedländer sepsis" on the hand of certain clinical symptoms without a bacteriologic examination of the blood. All phenomena and pathologic processes which appear in diseases caused by other infections also ensue in "Friedländer sepsis," and there is no difference in the clinical picture of the various septic conditions. As in other types of sepsis, there occurs in about one-third of the cases of general infection by the Friedländer bacillus a formation of metastases. The diagnosis of the specific type of sepsis is solely based upon a bacteriologic examination of the blood, from 5 to 20 c.c. of which should be withdrawn from a vein of the patient under sterile conditions.

MILL.

**Diagnosis of Scarlet Fever**—F. G. CROOKSHANK, Practitioner (London), Dec., 1910.

The characteristic features of scarlet fever desquamation, one or more of which can usually be observed, are: (1) fine powdering on the cheeks, giving the so-called powder and rouge appearance, seen quite early in the first week; (2) delicate 'scaling' over the clavicles best seen when viewed obliquely, quite early also in the clinical history; (3) "pin holes" or "worm holes," tiny crateriform uprisings of the skin from which peeling extends centrifugally, and (4) large flakes and scales leaving a red, tender skin beneath, and sometimes coming off the hands and feet like gloves or socks.

SACHS.

**Importance in Scarletina of an Early Bacterial Examination of the Secretion from the Postnasal Region**—E. C. SCHULTZE, Med. Rec., Dec. 10, 1910.

Author's investigations have extended over a period of 3 years, and he is fully convinced that the danger of infection in scarlatina is harbored in the throat and nasal passages and not in the scales from the period of desquamation. During six months author examined 2,000 cultures, 500 of which were taken from the throats of cases clinically ill with scarlatina. Immediate microscopical diagnosis corresponded with the clinical diagnosis in 301 instances and after an exhaustive search of the smears in other instances 108, making a total of 409. Sixty-one smears of the 2,000 cultures presented a microorganism closely resembling the one author considers characteristic of scarlatina, but clinically they had not been considered such. How many of these cases, if any, later developed scarlatina, author is unable to say. Three hundred and twenty-eight cultures from clinically true scarlatina, besides numerous other organisms, were complicated by a streptococcus in the majority of instances of a fine, short variety. It is worthy of note that 10 per cent. of these cultures—that is, from clinically true scarlatina—showed an organism morphologically identical with the Klebs-Löffler bacillus. The balance of the 2,000 smears showed Klebs-Löffler bacilli. A bacteriological examination of cultures from the throats of 100 children varying in age from 2 to 9 years, with no previous history of scarlatina, failed to show in the smears from a twenty-four-hour blood serum culture incubated at 37° C. the characteristic microscopical picture which had been observed in true scarlatina. Not satisfied with these observations, smears from twenty-four-hour cultures were made from 100 throats of patients averaging in age from 3 months to 60 years and considered clinically as diphtheria, erysipelas, measles, rubella, autointoxications, erythemata, parotitis, varicella, pneumonia, and influenza without

finding the microscopical picture found in smears from the throats of patients suffering from true scarlatina, although a coccus resembling the organism was occasionally found, especially in cases of parotitis. Fifty nasal cultures were secured from children varying in age from 3 to 6 years without a previous history of scarlatina, and but 3 showed an organism morphologically identical with the organism present in scarlatina. During the same period 55 children ill with scarlatina were studied and the organism found in 50 out of the 55 cases; in two as early as 48 hours before the appearance of the rash, and in one case 6 months, following discharge from the hospital. A large number of cases simulating scarlatina—that is, presenting a rash, mild angina, temperature, rapid pulse, tonsillar exudate—but giving no history of vomiting, no marked angina, and from which twenty-four-hour cultures failed to show the organism, were investigated and found not to be scarlatina, although the rash, temperature, rapid pulse, and mild angina at the time of the first examination might have justified a positive diagnosis.

WESTERN.

**Contagiousness of Scarlet Fever**—F. v. SZONTAGH, *Archiv. f. Kinderheilkunde*, Vol. LIV., Nos. 1-3.

Scarlet fever evinces in many respects its relation with erysipelas, suppurative tonsillitis and puerperal sepsis. Suppurative tonsillitis occurs not infrequently in an epidemic form. Such epidemics are often synchronous with epidemics of scarlet fever. The clinical picture of the latter may be entirely that of suppurative tonsillitis. The toxins of both affections are either identic or closely related. Inasmuch as suppurative tonsillitis is etiologically no uniform disease, it appears probable that the etiology of scarlet fever is also not uniform. The same is the case with puerperal fever, erysipelas, sepsis and pyemia.

MILL.

**The Liver in Scarlet Fever**—W. HILDEBRANDT, *Münchener med. Wochenschr.*, Nov. 29, 1910.

In the great majority of cases of scarlatina there occurs pathologically increased excretion of urobilin. Urobilinuria and temperature curve run about parallel; temperature elevation as well as excessive urobilin excretion decrease usually at about the same period, and the intensity of the urobilinuria stands in some relationship to the height of the fever. During the period of convalescence from scarlet fever there does not, as a rule, occur increased urobilin excretion. Very pronounced urobilinuria at the onset of a disease in which the diagnosis has to be made between scarlet fever, measles, röteln, diphtheria, and angina lacunaris or parenchymatosa, is a

symptom speaking for the presence of scarlet fever. In diphtheria, urobilinuria is a very rare occurrence, and in the other diseases it does not, at least in the beginning, attain the degree of intensity which it usually exhibits in scarlatina. Naturally, even in scarlet fever urobilinuria may not ensue because a parenchymatous hepatitis may not be present in the milder cases. The urine of every case of scarlatina should be examined as to its contents of urobilin because it is more than likely that scarlatinal hepatitis is of the same import in the pathogenesis of cirrhosis of the liver as is scarlatinal nephritis in the etiology of chronic nephritis. MILL.

**Non-Tuberculous Joint Diseases in Children**—J. A. COURTS, *British Med. Jour.*, Oct. 15, 1910.

In scarlet fever suppurative arthritis may occur quite early in the disease, and such cases are generally, but not necessarily, fatal. The most common joint affection in scarlet fever is that joint condition which was formerly known as scarlatinal rheumatism. It usually affects adults and older children, especially females. Its time of onset is remarkably constant, namely the fifth, sixth, or seventh day of the attack, just when the temperature is falling to normal. The arm is more often affected than the leg, the smaller joints more often than the larger ones, and the wrist and metacarpal joints most frequently of all. The heart and pericardium are very rarely affected and recovery is rapid. SACHS.

**Influenza and Appendicitis**—F. WEITLANER, *Wiener med. Wochenschr.*, Oct. 24, 1910.

Author discusses the two types of influenzal infection, that caused by Pfeiffer's bacillus and that which is due to the pneumococcus. Pneumococcal influenza is at present of much more frequent occurrence; it appears often as pneumococcal angina and in consequence thereof also as pneumococcal appendicitis. Appendicitis may thus be of hematogenous origin. Author recommends prolonged treatment with salicylates when operation is not resorted to. MILL.

**Complete Heart-Block in Diphtheria**—G. B. FLEMING and A. M. KENNEDY, *Heart* (London), Vol. II., No. 2.

Heart-block is a condition which has been fully investigated in chronic heart disease, but only a few cases have been reported in acute affections of the heart. Cases have been described in influenza, rheumatic fever, ulcerative endocarditis, typhoid fever, pneumonia and in one case of diphtheria, but in four cases only have post-mortem examinations been made. Author reports the result of

an autopsy in a case of diphtheria in a child ten years old, in which there was an acute inflammatory condition of the heart muscle and primitive cardiac tissue, producing complete heart-block, cardiac failure and death.

SACHS.

**Curable Forms of Meningitis and their Relation to Tuberculosis**—L. BERNARD and R. DEBRÉ, *Bulletin et Mémoire de la Société méd. des Hôpitaux de Paris*, Dec., 1910.

There are certain forms of meningitis which must be considered to be tuberculous as they cannot be fastened to any other etiological factor. It is not even necessary that the spinal fluid of these cases gives a positive result in guinea pigs. Such a case of meningitis does not necessarily terminate lethally. The tuberculous changes in the meninges may be so slight and transitory that a clinical cure may ensue.

ZIMMER.

**Cerebrospinal Meningitis**—L. W. LADD, *Cleveland Med. Jour.*, Nov., 1910.

A petechial eruption, when present in a patient presenting the clinical aspect of meningitis, is almost invariably diagnostic of meningococcus infection. Herpes labiales, however, while more commonly found in meningococcus infection, may also be present in influenzal or pneumococcic meningitis. Meningococcus meningitis not infrequently presents the picture, clinically considered diagnostic of tuberculous meningitis. The presence of choroid tubercles or signs of tuberculosis elsewhere may be of value in differentiating such cases. In several of author's cases where meningitis was suspected and no symptom pointed to middle ear disease, the otoscopic examination revealed unmistakable evidence of inflammation and prompt relief of symptoms resulted from paracentesis. When one realizes that a high continuous fever may persist for several weeks in a child 12 years of age without pain in the ear being complained of, and that prompt relief may follow paracentesis with the evacuation of pus, it is easy to understand how a purulent meningitis may develop in a much younger child as a result of an unrecognized middle ear disease. In all cases of meningitis, careful otoscopic examination should be made. Lumbar puncture offers us the most satisfactory means of arriving at a correct diagnosis in the shortest space of time, and should be promptly done when there is the slightest suspicion of an existing meningitis.

WESTERN.

**Cerebrospinal Fluid in Acute Anterior Poliomyelitis**—W. H. HOUGH and G. R. LAFORA, *N. Y. Med. Jour.*, Nov. 5, 1910.

Résumé based on the study of 11 cases of acute anterior poliomyelitis taken during the recent epidemic in Washington. In all

cases the spinal fluid was perfectly clear, the pressure was slightly increased in most of the cases, the protein content was increased, and there existed a moderate pleocytosis. In 3 cases examined during the first stages of the disease there was observed the highest proportion of polymorphonuclear leucocytes (18 per cent., 14 per cent., and 4.5 per cent.). The polymorphonuclear leucocytes disappeared after the fifth or sixth day of the disease through the phagocytic activity of the macrophages, which latter sometimes contained from 10 to 20 or more chromatin bodies, probably remains of the nuclei of the polymorphonuclear leucocytes. In the early cases authors observed a number of altered red blood cells; later in the disease there were observed many lymphocytes, some plasma cells, a few Körnchenzellen and macrophages, and occasionally mast cells. No stained bacteria of any kind could be found in the preparation from these cases.

WESTERN.

**Poliomyelitis; Early Diagnosis of**—T. A. WILLIAMS, *Monthly Cyclop. and Med. Bul.*, Nov., 1910.

The earliest symptoms of poliomyelitis are usually one or more of the following: great weakness with apathy or irritability, sometimes including photophobia; sometimes slight coryza; marked insomnia is often present, and this in a child without fever or intestinal trouble should excite suspicion. When this is followed by great weakness, and restlessness later occurs, suspicion is still stronger, and, when profuse perspiration begins without a very high fever, author believes that the diagnosis should be made, more especially if any reflexes have diminished or Kernig's sign occurs. Cases of poliomyelitis have often been called rheumatism. This is on account of the severe pain and great tenderness which occur when the meninges are much inflamed. The distinction, however, is quite easy; for in acute rheumatism the joints themselves are inflamed, and hence are hot, red and swollen; whereas in poliomyelitis there is no special heat, redness or swelling of the joints or limbs. Besides, there is always a modification of the reflexes in poliomyelitis, and as soon as the horn cells of any segment are invaded the reflex arising in that segment is first diminished and later suppressed, often several hours before paralysis occurs. When the attack is mainly on the pyramidal fibers, either in the affected segment or high up in the cord, the reflexes may be exaggerated in that part of the body supplied by these fibers. Again, before the meningeal inflammation has extended to the cord, there may be for a time an exaggeration of reflex activity.

WESTERN.

**Acute Primary Polymyositis**—C. F. CLOWE, N. Y. Méd. Jour., Dec. 10, 1910.

Three distinct varieties of acute primary polymyositis have been described. (1) Simple acute myositis. Onset is with lassitude and mild constitutional disturbances, pain, and tenderness in certain groups of muscles. Patients either improve after a few days or the type lapses into one of the other varieties. (2) Acute infectious. Great lassitude and marked pain. Constitutional disturbances are severe. Affected muscles are prominent, very tender, woody, hard or doughy to the feel and sensitive. Patient takes position to relax the affected parts. When suppuration begins high fever, cutaneous eruption, and severe symptoms are present. Usually ends with diarrhea. (3) Primary subacute infections. Prodromes are long, lasting from 3 to 5 weeks, pain, lassitude, slight fever, nausea, headache, and weakness, then chills, some fever, edema of the face and extremities, pain, and redness, macular eruptions on the face and extremities, gastric disturbances, patient grows rigid and helpless; reactions and reflexes are much lessened or almost disappear, constipation marked, thirst. Form two lasts from 5 to 20 days, and most patients die. If they recover they do so in 3 or 4 months. In form one the patients usually recover unless they lapse into form two. Form three lasts from 3 to 4 months and few patients recover. If they do it is a matter of many months or of years before recovery is complete. Differential diagnosis must be made from rheumatism, typhoid, suppurative arthritis, trichinosis, multiple neuritis, and osteomyelitis.

WESTERN.

## RESPIRATORY AND CIRCULATORY ORGANS

**Rôle played in Auscultatory Signs of the Respiratory System by the Sound-conducting Property of the Bony Framework of the Thorax**—J. H. BARACH, Am. Jour. Med. Sci., Dec., 1910.

Typical bronchial breathing may be heard at the acromion end of the clavicle. Not only is bronchial breathing heard, but the spoken and whispered voice sounds are clearly transmitted. From our knowledge of the anatomic relations we know at once that beneath the acromion end of the clavicle there is no pulmonary tissue. This typical bronchial breathing is transmitted through the clavicle by bone conduction, and the author states that his observations conclusively prove that the bony framework of the chest is capable of transmitting auscultatory signs from points near their source of origin to distinct points on the contour of the chest wall. The application of this statement will explain the broncho-vesicular breath-



ing and increased vocal fremitus and resonance over the right apex. The sound emanating from the healthy lung apex is vesicular, while that transmitted through the bony framework is bronchial. The trachea, because of its prominence to the thoracic wall, lying to the right of the median line, imparts more sound vibrations to the right half of the upper part of the sternum, right clavicle and first two ribs; these, by their property of sound conduction, transmit the bronchial element across that portion of the chest wall which covers the right apex of the right lung. In normal chests of slender adults and in children, we quite frequently hear distinct bronchial breathing at points a considerable distance from the areas overlying the normal position of the trachea or bronchi. Taking this fact into consideration, other positive evidences of pulmonary consolidation other than bronchial breathing must be present before we can say that the lung beneath the area of auscultation is more dense than normally.

SACHS.

**Results of Bronchial Obstruction**—G. N. PITT, *Lancet*, Dec. 10, 1910.

A foreign body generally passes into the right bronchus because it is more vertical and is also slightly larger than the left one. In the diagnosis of this condition the history of swallowing something immediately before the onset of an acute attack of severe dyspnea and cough is very suggestive. A wheezing sound or whistling sound is present, which the patient can localize to one side, varying in quality if the object is not fixed in the bronchus. Not infrequently there exists great distress with a constricting pain behind the sternum, made worse by movement. Dyspnea with varying exacerbations, often intense and made worse by cough, may be present. Breath-sounds may be absent, or rarely very noisy breath-sounds may exist. At first resonance on the affected side, soon consolidation with dulness and after a time, the sign of cavities and the simulation of phthisis may supervene. The physical signs vary from time to time. The X-ray reveals defective movement of the diaphragm and of the thorax, the alteration in density of the lungs, and not infrequently, the outline of the foreign body itself may be seen. Delay in the commencement of inspiration as compared to the opposite side is often present. Violent paroxysmal persistent cough is most marked when the foreign body is at the bifurcation of the bronchus. When there exists a combination of the above symptoms and signs, a bronchoscope should be passed. Early pyrexia, which later becomes hectic, associated with chills and leading up to a septic pneumonia may develop.

SACHS.

**Symptomatology and Frequency of Intrathoracic Struma**—S. KREUZFUCHS, Münchener med. Wochenschr., Jan. 3, 1911.

Intrathoracic goiter is by no means a rare occurrence, but its diagnosis without the employment of the Röntgen rays is often very difficult. Its most important symptoms are: dyspnea, palpitation, difficulty in deglutition, cough, hoarseness, stridor, redness and puffiness of the face, cyanosis of the lips, dilatation of the veins in the neck and the anterior, upper portion of the chest, dulness over the manubrium sterni and downward displacement of the larynx.

MILL.

**Different Forms of Mediastinal Pleurisy**—A. FRICK, Jour. A. M. A., Dec. 10, 1910.

The clinical manifestations of mediastinal exudative pleurisy differ according to the part of the mediastinal pleura involved, and consequently according to the part of the mediastinum exposed to pressure. For this reason three different forms of mediastinal pleurisy are to be distinguished: (1) pleuritis mediastinalis anterior sinistra, (2) pleuritis mediastinalis anterior dextra, (3) pleuritis mediastinalis posterior. This distinction is justified, not merely from an anatomic point of view, but because it corresponds closely to clinical facts. Pleuritis mediastinalis anterior sinistra resembles very much exudative pericarditis. The most striking symptom of a pleuritis mediastinalis anterior dextra is a very deep cyanosis of head, neck, thorax and upper extremities. A posterior mediastinal pleurisy will, provided the exudate is deeply situated and is sufficiently large, cause inspiratory stridor and sometimes a deviation of the trachea by pressure on the trachea, dysphagia by pressure on the esophagus, engorgement of the intercostal veins by pressure on the azygos veins, and paroxysmal cough by pressure on the pneumogastric nerve.

WESTERN.

**Paroxysmal Pulmonary Edema**—A. STENGEL, Am. Jour. Med. Sci., Jan., 1911.

Paroxysmal pulmonary edema occurs suddenly with little or no forewarnings and soon assumes such alarming characters that the patient and those about him feel that a fatal termination can be a matter of but few minutes. At the very beginning the patient experiences a sense of suffocation or oppression of breathing which speedily becomes extreme. Struggling for breath he soon becomes more oppressed by paroxysms of suppressed cough in which some frothy and often blood-tinged serous fluid is brought up. Larger amounts of the same kind of frothy serum may be expectorated later. Breathing is merely moist on auscultation or noisy, accord-

ing to the degree of edema; in severe attacks it becomes suppressed. At the moment of the attack the patient grows suddenly deathly pale and wears the anxious expression of terror of one who fears instant death. Hands, feet, and entire body grow cold and become bathed in a dripping sweat. When respirations become more difficult, cyanosis becomes associated with the pallor. The pulse, usually extremely weak and rapid in the beginning, may continue so. Occasionally, the pulse may be rapid and excited during an attack and may give no evidence of reduced cardiac power. At the beginning of the attack the patient is generally nervous and frightened; later a certain amount of stupor may develop. After a time the patient grows easier; warmth returns to the hands, breathing improves, the moist râles in the chest grow less abundant, color returns to the face, and the pulse grows stronger and less frequent. Only in a small proportion of cases there will ensue a fatal issue. The clinical distinguishing features of this condition are its sudden onset; the evidence of intense pulmonary edema; the expectoration of quantities of frothy and blood-stained serum; and the repetition of such attacks without intercurrent complicating conditions. The seizures supervene, as a rule, in the evening or after the patient has gone to bed. He may awake from a profound sleep with an oppressed cough, followed by the symptoms described. Various kinds of excitement, physical or mental, may provoke the attacks. Repeated attacks of the same character may occur at intervals of days or weeks during a long period of time. Between attacks the patient may be perfectly well, or more frequently give evidence of some inadequacy of cardiac compensation. WESTERN.

**Fatal Cases of Pulmonary Thrombosis**—E. GLYNN and B. J. KNOWLES, *British Med. Jour.*, Nov. 5, 1910.

Spontaneous thrombosis is much more common than embolism. An unaccountable acceleration of the pulse or respiration rate, beginning in the second week after a major operation, especially an abdominal operation, and associated with slight pyrexia, suggests the possibility of spontaneous pulmonary thrombosis and of a sudden fatal termination in about the third week. Spontaneous thrombosis as well as emboli may cause death in a few minutes.

SACHS.

**Typical and Atypical Pulmonary Phthisis**—D. v. HANSEMAN, *Berliner klin. Wochenschr.*, Jan. 2, 1911.

A very important contribution concerning the conceptions "pulmonary phthisis" and "pulmonary tuberculosis." The article does not lend itself to a short résumé, and must be studied in the original.

Author advocates classification of pulmonary phthisis upon an anatomic basis and denies the rationale of making it dependent upon the presence or absence of the tubercle bacillus.

MILL.

**Diagnosis of Tuberculosis of the Bronchial Glands**—H. F. STOLL, Am. Jour. Med. Sci., Jan., 1911.

Author draws the following conclusions: tuberculosis of the bronchial glands often exists as a distinct clinical entity, capable of diagnosis. While the diagnosis is more readily made in children, it can frequently be made in adults. The presence of dilated veins over the anterior aspect of the chest, spinalgia, interscapular or vertebral dulness, and vertebral bronchophony speak strongly for enlarged bronchial glands, the tuberculous nature of which is practically assured when in addition to the above the individual is under weight and has a paroxysmal cough and the symptoms of the tuberculous toxemia. The recognition of the disease, while it is still limited to the bronchial glands, is of the utmost importance, as we know the most salutary results of tuberculin therapy are obtained in glandular tuberculosis.

WESTERN.

**Local Tenderness on Pressure in Tuberculosis**—C. SABOURIN, Med. Press and Circular (London), Nov. 9, 1910.

Gradual pressure with the tip of the index finger over the apices, behind the supraspinal fossæ, under the clavicle in front, and the supraclavicular triangle, elicits in one or several spots an exaggerated tenderness which the patient readily distinguishes from the sensation of mere pressure on the neighboring areas. This local limited tenderness may or may not be accompanied by defensive muscular contraction manifested by slight contraction of the muscles of the neck or shoulder. Author asserts that cases of pulmonary tuberculosis in which this sign is lacking are very rare. The more active the bacillary process, the more pronounced is the tenderness, so that it reaches its maximum in newly formed lesions.

SACHS.

**Which Lung is preferentially affected by Tuberculosis?**—STRANDGAARD, Zeitschr. f. Tuberkulose, Vol. XVI., No. 4.

At first the right apex and then the left apex become affected. Subsequently the infiltration extends downward in the right upper lobe which, as a rule, is in the second stage still more involved than the corresponding region on the left side. The disease becomes now arrested on the right side, but it extends downward on the left side, at first over the anterior surface of the lower lobe and afterwards

over its posterior surface. This is soon followed by infiltration of the right side downward over the anterior surface, while the lower portion of the right posterior surface becomes infiltrated last. This is the most frequent course of the tubercular process in the lungs, but many other combinations are often apt to supervene. FRY.

**Röntgen Diagnosis of Pulmonary Tuberculosis**—M. COHN, Berliner klin. Wochenschr., Jan. 2, 1911.

The anatomic substrates of pulmonary tuberculosis cannot be produced in the Röntgen picture. The special diagnosis by the Röntgen rays has to take into account all the formations whose normally large number of varieties may give cause to wrong interpretations; these are especially the hilus shadows (also secondary shadows) which on account of their appearance may be mistaken for pathologic occurrences. MILL.

**Visceral Syphilis with Special Reference to the Larger Blood Vessels**—R. ABRAHAMS, Post-Graduate, Nov., 1910.

The diagnosis of syphilis of the arch of the aorta depends, (1) on the sex and age of the patient; the patient will be a male and anywhere from 25 to 35 years old, (2) upon physical findings. Light percussion over the arch of the aorta gives an area of distinct dulness far and beyond of what is found normally. The more the sclerosis the greater the dulness. Auscultation will often yield a rough sound or bruit, systolic or diastolic, not unlike a murmur, extending all along the area of dulness but principally over the aortic area. In a case which presents these physical features combined with young age and sex, the diagnosis and origin of the lesion are beyond question. Aneurism of the thoracic aorta is avowedly syphilitic in origin in the majority of cases. When an aneurism is of luetic influence, its diagnosis is aided by its rapid growth. Given a case of known syphilis, inequality of the pupils, all things being equal, is suggestive of aneurism of the arch of the aorta. In palpating the radial and brachial arteries, if both are absent in the same extremity, a search for aneurism should be made. If there is a preternatural engorgement of the jugular veins on one side of the neck, look for an aneurism. In the presence of an unaccountable swelling of an upper extremity aneurism as a cause should be thought of. A marked displacement of the heart downward and to the left, accompanied by ascites and edema of the feet, other causes being excluded, it is well to think of aneurism of the arch. A strong visible as well as palpable pulsation extending across the right and left second interspaces suggests aneurism. A marked and

heaving pulsation of one carotid at or slightly above the sternoclavicular articulation argues in favor of aneurism. So much for signs. Now as to symptoms. (1) Dysphagia of a slow and gradual development. (2) Spasmodic cough with or without, mostly without, mucous expectoration. (3) Aphonia without disease of the vocal cords or other laryngeal trouble. (4) Small but repeated hemoptysis in the absence of tuberculous lesion of the lungs. (5) Sudden stabbing pain starting at the precordium and shooting through the chest and back. (6) Localized, severe, pain over a rib or a vertebra may result from the presence of aneurism. WESTERN.

**Paroxysmal Tachycardia accompanied by the Ventricular Form of Venous Pulse**—T. LEWIS, *Heart* (London), Vol. II., No. 2.

A case of paroxysmal tachycardia is described in which the ventricular form of venous pulse was present, as a result of simultaneous contraction of auricle and ventricle. SACHS.

**Clinical Significance of Transitory Delirium Cordis**—G. H. FOX, *Am. Jour. Med. Sci.*, Dec., 1910.

Of 6 patients in whom transient attacks of delirium cordis were observed, five eventually developed the permanent type of irregularity. Many features of the attacks themselves would suggest a nervous condition, especially the onset under excitement and the complete recovery between attacks with no demonstrable heart change. The prognosis should, however, be guarded and efforts made to avert the onset of permanent irregularity, which is practically always accompanied by symptoms of cardiac insufficiency.

SACHS.

## ALIMENTARY TRACT

**A new Procedure for the Direct Demonstration of Free Acid in the Stomach**—E. FULD, *Berliner klin. Wochenschr.*, Oct. 31, 1910.

An hour after the ingestion of the test breakfast the patient takes a swallow of a watery solution of sodium. Before this is done the absence of sounds in the stomach has to be ascertained by auscultation. As soon as the sodium solution has been imbibed, auscultation of the stomach should again be performed. When the liquid reaches the stomach, gurgling sounds are noted, and a few seconds later the crackling of the bubbles, in case free hydrochloric acid be present, will be audible.

MILL.

**Gastric Radioscopy**—A. E. BARCLAY, Archives of the Röntgen Ray (London), Oct., 1910.

In the investigation of cases where operative interference has failed to relieve the symptoms, author quotes the following interesting examples where a radioscopic examination revealed the cause of the trouble. (1) Stenosis of the pylorus had been found at the operation and a posterior gastro-jejunostomy had failed to relieve the condition. The radioscopic examination showed that there was an hour-glass contraction which had not been noted at the time of the operation. (2) A patient had been operated upon for gastric ulcer; vomiting was persistent and yet on radioscopic examination it was found that the food was passing out perfectly, but that there existed adhesions near the cardiac orifice almost bisecting the stomach. A further operation completely relieved the patient. (3) A patient had been operated upon for gastric ulcer and persistently vomited; on X-ray examination it was found that the food was held up in the duodenum, and apparently a vicious cycle was formed. (4) A patient presented exactly the same clinical picture as the third case, but it was found that there occurred no delay in the duodenum and that everything was working perfectly. On the strength of the X-ray report, the surgeon spoke very strongly to the patient, reduced her to tears, and from that day onward she ceased to vomit and she regained her health. (5) Failure in another case was due to a spasmodic hour-glass contraction for which no cause could be found at a second operation. In conclusion author states that, provided that a good view can be obtained, a definite opinion can be expressed as to the actual state of the stomach, as to whether it fulfills its functions, and a definite idea as to the presence or absence of pyloric obstruction and hour-glass stomach can be formed. Proof of carcinoma of the stomach is obtained in many cases, and the need of operative interference for obstruction is always indicated often before a clinical diagnosis can be arrived at. Gastric ulcer may be diagnosed in some situations by reason of bismuth left in the ulcer or in pockets of cicatrices, but its site is more frequently indicated by spasmodic contractions which play a part in all lesions of the stomach, and complicate the diagnosis.

SACHS.

**Röntgen Diagnosis of Callous (Penetrating) Gastric Ulcer and its Significance**—M. HAUDEK, Münchener med. Wochenschr., Nov. 22, 1910.

Author advances six radiologic symptoms for the diagnosis of penetrating gastric ulcer. (1) A bismuth spot isolated from the bismuth-filled portion of the stomach, often diverticulaform, situated in the middle portion near the small curvature; (2) a gas bubble above this; (3) longer retention of bismuth on this spot; (4) non-disturbance of this spot by palpation; (5) when in right

side posture after ingestion of the bismuth mixture, the bismuth may become more markedly deposited in the ulcer which is mostly situated at the small curvature; (6) a penetrating ulcer situated at the posterior wall and hidden by the shadow of the stomach may be discovered by turning the patient. Details and diagrams must be studied in the original. MILL.

**True Duodenal Ulcer**—A. MATHIEU, Bulletin et Mémoire de la Société méd. des Hôpitaux de Paris, Déc., 1910.

English and American surgeons diagnose duodenal ulcer very frequently, and maintain that the diagnosis of this condition is an easy matter. The latter assumption is due to the fact that besides the true duodenal ulcers, processes of an ulcerative nature in the pyloric region are comprised in this category. That what the French call duodenal ulcer is an affection of comparative infrequency. The clinical signs pointing to a true duodenal ulcer are pain and pressure sensitiveness to the right of the median line, absence of any phenomena characteristic of pyloric stenosis, and irregularly supervening crises of pain, which are comparatively little influenced by the introduction into the stomach of food or alkalies. ZIMMER.

**Post-Narcotic Gastric Paralysis**—A. PAYER, Mitteilungen a. d. Grenzgebieten d. Medizin u. Chirurgie, 1910, No. 3.

Immediately after the narcotic sleep a marked gastric atony can be demonstrated in nearly every individual. The stomach in these instances extends not infrequently to the umbilicus or even below this. The degree of gastric atony is varying, but it is demonstrable in nearly every case. It is independent of the age of the patient, and there is no distinct relation between it and enteroptosis. The stomach pareses are generally very mild affections; they disappear mostly after from 12 to 24 hours. Post-narcotic vomiting is directly dependent upon the stomach paresis as in all cases with prolonged vomiting, the gastric dilatation could also be demonstrated. The critical period for gastric pareses is from the third to the fifth day, on which a more solid diet is usually ingested. Dietary indiscretions exert an unfavorable influence upon the paretic condition. MILL.

**Import of the Antitrypsin Reaction for the Diagnosis and Prognosis of Carcinoma**—A. PINKUSS, Berliner klin. Wochenschr., Dec. 19, 1910.

Author employed Brieger's antitrypsin reaction in 98 cases; it failed in but 8 cases. Together with the clinical picture the antitrypsin reaction is of great import for the diagnosis of carcinoma. The method is a good control test to determine the success of an operation or other therapeutic endeavors. MILL.



**Relation of Disease of the Gall-Bladder and Biliary Ducts to the Gastric Functions**—J. A. LICHTY, *Am. Jour. Med. Sci.*, Jan., 1911.

A lesion of the gall-bladder and ducts may disturb the gastric functions. This disturbance most frequently consists of a hypersecretion of gastric juice and a diminution of gastric motility, and may be in direct proportion to the lesions present. So-called hyperchlorhydria with its accompanying symptoms, should be looked upon as an evidence of some definite pathologic lesion somewhere in the gastrointestinal tract or its appendages, and should be treated symptomatically only when organic disease can be excluded with a satisfactory degree of certainty.

WESTERN.

**Appendicitis in Childhood**—H. C. DEEVER, *Jour. A. M. A.*, Dec. 24, 1910.

"All cases of abdominal trouble in children are appendicitis until proved otherwise." The younger the child, the more deeply the appendix lies in the pelvis. Hence, it is conceivable that bladder symptoms may monopolize the attention of the examiner, there being cloudy urine from edema of the bladder, tenesmus, and even retention from direct irritation of the bladder wall. The simple procedure of catheterizing the bladder may clear up a doubtful case. Rectal palpation is one of the most important diagnostic procedures in childhood. Palpable resistance on the right side by rectal examination is one of the most frequent findings. Tenderness at McBurney's point, when present, is almost pathognomonic, but the wandering appendices of childhood may carry their tenderness elsewhere. Thus, tenderness may be greater on the left side than on the right, as when the appendix is in the pelvis. Other signs, more applicable to older children, are hyperesthesia of the skin, and the fact that sudden removal of the palpating finger-tips from the point of greatest tenderness is more painful than the finger-tips themselves. Flexion of the right thigh on the abdomen is likewise very suggestive. Affections of the thoracic, abdominal and pelvic viscera, as well as of near-by joints, may enviously mimic the peculiar little ways of the appendix. The old question of pneumonia or appendicitis must be carefully considered, particularly right-sided central pneumonia with but few physical signs. At the onset of right-sided croupous or central pneumonia, pain is often referred to the abdomen. This abdominal hyperesthesia may disappear by firm manual pressure, and the abdominal wall relax between respirations, which are very rapid. There may be herpes and cyanosis of the lips. Intestinal catarrh, especially when accompanied by colic, may cloud the diagnosis because of pain, vomiting, increased abdominal tension, fever and rapid pulse. In girls, salpingitis and gonococcic peritonitis must be considered, and the presence of vaginal discharge or

vulvovaginitis will be helpful, as well as rectal examination. Acute cystitis in small children, caused by the colon bacillus, gives rise to fever, pains about the navel and vomiting; urinalysis will determine the diagnosis in these cases. The prognosis of acute appendicitis is favorable, if the case is received early, and if the appendix is removed early.

WESTERN.

**The Movable Cecum as the Cause of certain Cases of so-called Chronic Appendicitis**—E. STIERLIN, *Deutsche Zeitschr. f. Chirurgie*, Vol. CVI., No. 4.

Movable cecum evinces itself by attacks of colic appearing in intervals at the site of the cecum or ascending colon in 86 per cent. of the cases; the attacks last occasionally for some time, giving rise to painful sensations in the cecal area and even in the gastric region. Chronic constipation occasionally alternating with diarrhea is present in 77 per cent. of the cases; there exists also a gurgling tumefaction in the cecal region. The diagnosis can be made by the Röntgen rays by demonstrating the abnormal mobility and size of the cecum with its greatly reduced motor activity. The pains are due to traction of the distended and downward displaced cecum upon its mesentery.

STEIN.

**Enteritis Membranacea**—CZYHLARZ, *Archiv f. Verdauungskrankheiten*, Vol. XVI., No. 4.

Author confirms Nothnagel's dualistic conception as regards the etiology of the clinically resembling two symptom-complexes known as colica mucosa and enteritis membranacea. It must be clearly differentiated between colica mucosa on a nervous basis which follows chronic, mostly spastic constipation and enteritis membranacea arising on the foundation of an inflammatory-catarrhal process. Colica mucosa is the more frequent affection of the two and must be considered a secretory neurosis; enteritis membranacea does not exhibit any phenomena which could be attributed to a nervous affection.

WESTERN.

**Pancreas Reaction of Cammidge**—FILIPPO, *Tijdschr. voor Geneesk.*, 1910, No. 24.

A positive pancreas reaction may be expected in every urine. The reaction is due to the presence of paired glycuronic acid in the urine. The intensity of the reaction depends upon accidental occurrences. A positive reaction is normal and offers no aid in the recognition of the condition of the pancreas.

WEBB.

**Pancreas Reaction of Cammidge**—L. D'AMATO and G. CUOMO, *Zentralblatt f. innere Medizin*, 1910, No. 41.

The value of the pancreas reaction of Cammidge in the recognition of pancreatic disease is as yet undetermined. The reaction never ensues in healthy persons, but occurs frequently in various affections of the liver, especially cirrhosis, and in pancreatic diseases. It ensues most frequently in diseases of those organs which regulate carbohydrate metabolism. The reaction is evidently not caused by traces of glucose. We do as yet not know which carbohydrate gives rise to it. It appears that all polysaccharides which can combine with phenylhydrazin may give a positive Cammidge reaction when they are contained in the urine. WESTERN.

**Pancreas Reaction of Cammidge**—L. C. KINNEY, *Am. Jour. Med. Sci.*, Dec., 1910.

Author after 15 months of experience with the Cammidge reaction believes that it has a very limited value. A negative reaction does not indicate that the pancreas is normal, for negative results have been obtained in acute and chronic pancreatitis, carcinoma and cysts of the pancreas. A positive reaction can only be considered of value as a confirmatory examination. SACHS.

## NERVOUS SYSTEM

**Lumbar Puncture with especial Reference to the Nonne-Apelt Reaction**—ASSMANN, *Deutsche Zeitschr. f. Nervenheilkunde*, Vol. XL., No. 2.

Results of 190 examinations. The Nonne-Apelt reaction is of great diagnostic import. It ensued invariably in paralysis and tabes, frequently in cerebrospinal syphilis, very rarely in chronic, but more frequently in non-syphilitic, organic nervous diseases (meningitis). Separation of a clot from the spinal fluid points to the presence of diffuse changes. WESTERN.

**The Wassermann Reaction in Psychiatry and Neurology**—WASSERMAYER and BERING, *Archiv f. Psychiatrie u. Nervenkrankheiten*, Vol. XLVII., No. 2.

Authors obtained in paralytics a positive Wassermann reaction in the blood in 90 per cent., and in the spinal fluid in only 44 per cent. of the cases. They maintain that a chemic and microscopic examination of the spinal fluid will yield decidedly more reliable results. WESTERN.

**Erythromelalgia**—E. A. CHILL, Practitioner (London), Dec., 1910.

Erythromelalgia or red neuralgia is a chronic disease in which a part or parts of the body—usually one or more extremities—suffer with pain, flushing, and local fever, made far worse if the parts hang down. The majority of cases occur during middle life. The disease affects men more than women, the opposite to Raynaud's disease. In the latter we have pallor and coldness of the parts, which is unaffected by seasons, and a liability to gangrene, while in erythromelalgia there is heat and redness, worse in the summer, and eased by cold, and no tendency to gangrene. SACHS.

**Ischemic Paralysis**—A. S. UNGER, Internat. Jour. of Surg., Nov., 1910.

The principal causes of ischemic paralysis are interference with the circulation and pressure on the nerves, although the latter is rarely the direct cause. The circulation may be interfered with by too tight application of splints and bracing, and by the unduly prolonged use of elastic constriction or tunica. The forearm is the region most commonly involved, the lower extremities but rarely. The affected muscles generally become densely infiltrated unless the cause is removed within twenty-four or forty-eight hours, or earlier. The fibers degenerate and the portions attacked undergo contraction. Pain is an early and important symptom. Within a few hours the hand or part affected becomes swollen. If the forearm is affected, the phalanges become flexed and there is paralysis of the muscles, these in turn becoming hard, thick and swollen. If the pain is absent, the condition is apt to go unrecognized. If the exciting cause be not removed, necrosis or ulceration of the skin may be present; but these lesions are merely concomitants unrelated to the degeneration. When recovery takes place there is always a permanent contracture. When the forearm is the site of disease, the resulting deformity is also characteristic—the phalanges are flexed on each other, but the metacarpo-phalangeal articulation remains extended. The phalanges cannot be extended while the wrist is extended, but as soon as the wrist is flexed the fingers can be straightened. If the musculature has been more extensively affected, the wrist becomes flexed as well as the fingers. STEIN.

**New Sign of Meningeal Inflammation**—SIGNORELLI, Rivista Crit. di Clin. Med., 1910, No. 15.

Description of a new sign which is present during the entire course of the affection. It frequently precedes the Kernig sign and the stiffness of the neck. It consists in the hypersensitiveness of the retromandibular tender point. This point is to be looked for behind the superior extremity of the inferior maxilla, below the lobule

of the ear, and anterior to the mastoid process. This point is always sensitive in the healthy; in instances of meningitis, however, pressure with the index finger causes violent pain and also contractions of the muscles of the face.

ZIMMER.

**Meningitis Carcinomatosa**—M. LISSAUER, *Deutsche med. Wochenschr.*, Jan. 5, 1911.

Carcinoma has little tendency to form metastases in the central nervous system. Author reports an interesting case of meningitis carcinomatosa which occurred in a woman 47 years old. At autopsy it was found that the carcinomatous process extended over the entire brain, over its convexity as well as its base, also over the entire medulla oblongata. In the substance of the brain and spinal marrow no changes could be demonstrated. When brain symptoms occur in a patient with carcinoma, meningitis carcinomatosa must be thought of.

MILL.

**Thrombotic Softening of the Spinal Cord as a Cause of so-called Acute Myelitis**—H. C. BASTIAN, *Lancet*, Nov. 26, 1910.

In the great majority of cases of so-called acute myelitis, and also of acute poliomyelitis, the affection is caused not by an inflammation, but by thrombosis of some of the vessels of the spinal cord. The disease is most commonly met with in such persons whose heart's action, blood vessels, and quality of blood are known to favor the occurrence of thrombosis. The mode of onset, and the early symptomatology of the affection are wholly different from what they would be, had an inflammation of the cord actually existed.

SACHS.

**Tumors of the Third Ventricle with the Establishment of a Symptom-Complex**—T. H. WEISENBURG, *Brain* (London), Oct., 1910.

In tumors of the third ventricle internal hydrocephalus nearly always occurs, either because of interference with the flow of the fluid or the function of the choroid plexus. Growths within the third ventricle do not cause specific symptoms, and their recognition depends entirely upon the symptoms of pressure on the surrounding structures. Tumors of moderate size limited to the third ventricle, present symptoms of internal hydrocephalus, with the addition that there is nearly always paresis of the limbs of one or both sides and possibly affection of the thalamus. Tumors so situated as to obstruct the foramina of Monro, cause dilatation of the lateral ventricles, and their position can be changed by deviation of the head, producing variation in the symptoms. Tumors which attack the parts surrounding the aqueduct of Sylvius cause paralysis of asso-

ciated ocular movement, and of convergence upward and, less commonly downward, ataxia of the cerebellar type, as shown in the gait, station or voluntary movements of the limbs, at times ptosis of the upper lids and protrusion of either one or both eyeballs, generally large pupils with impaired reactions, paresis of the limbs of one or both sides, either with increased, normal, or diminished reflexes, and the general symptoms of tumor, as headache, choked disk, nausea, vomiting, and vertigo. Lesions of the third ventricle do not cause specific mental symptoms. The occurrence of mental symptoms is dependent upon the compression of the cortex within the skull.

SACHS.

**Tumors of the Region of the Corpora Quadrigemina**—R. T. WILLIAMSON, Medical Press (London), Nov. 30, 1910.

In all cases presenting the general symptoms of intracranial growth (headache, vomiting, and double optic neuritis) when ataxia is present and there is a tendency to fall forward, the possibility of a tumor of the corpora quadrigemina should be carefully considered. If in addition to these symptoms, there is a paralysis of one or both third nerves, more or less complete, or paralysis of one or both fourth nerves, growth in the region of the corpora quadrigemina is probable.

SACHS.

**Exophthalmos in Brain Tumor**—T. H. WEISENBURG, Jour. A. M. A., Dec. 3, 1910.

Exophthalmos accompanies brain tumor more frequently than is generally supposed. It occurs only in those cases in which there exists considerable intracranial pressure, especially when there is in addition direct interference with the normal flow of the cerebrospinal fluid. It is caused by direct pressure on the cavernous sinus. Its presence is of some clinical value inasmuch as unilateral exophthalmos is nearly always indicative of an intracranial lesion on the same side. In those cases in which the protrusion is bilateral there is nearly always a greater exophthalmos on the side of the greater intracranial pressure or lesion.

WESTERN.

**Reaction of the Urine with Liquor Bellonii in Paralysis**—P. BEISELE, Münchener med. Wochenschr., Jan. 3, 1911.

The reagent consists of a solution of mercury nitrate in water with the addition of a small amount of nitric acid. It is prepared by placing 10 grams of the crystallized salt into a beaker and by dissolving it in 88.6 c.c. water containing 24 drops nitric acid (25%). The water is slowly added in order to prevent deposition of insoluble basic salt. The reagent is clear, reacts sour and must be protected

from light. The test is performed as follows: a few cubic centimeters of the urine are boiled in a test tube; disregarding an eventual turbidity which may have ensued, 10 to 15 drops of the reagent are added, and the mixture is allowed to boil up two or three times, care being taken that it does not boil over. The mixture is then set aside for sedimentation. The sediment is white or white-yellowish in normal urines; in the urines of paralytics it varies from gray to gray-black and the supernatant fluid appears gray-yellow. The contents of the test tube should be examined after they have again become cold as a gray ring may be formed above a white sediment which also indicates a positive reaction. Author confirms the observations of Butenko, the originator of the test, that the reaction is specific in progressive paralysis. In 25 of his 27 cases of progressive paralysis, that is in 94 per cent., he obtained a gray sediment which means a positive reaction.

MILL.

**Viscosity of the Blood in Epilepsy**—R. D. BROWN, *Jour. of Mental Science* (London), Oct., 1910.

In epilepsy there is present in the blood some factor affecting its viscosity. The viscosity value is highest in those epileptics in whom the seizures are most severe and most frequent. In those patients who have only an occasional fit, the viscosity is but slightly higher than that of a healthy person.

SACHS.

**Brain and Psychosis**—E. FANKHAUSER, *Korrespondenz-Blatt f. Schweizer Aerzte*, 1910, No. 35.

Brief description of the anatomical brain changes in paralysis, idiocy, dementia senilis, dementia præcox, manic-depressive insanity, etc. The diseases of the hysteria group must be considered psychic affections par excellence. The deeper we proceed into the domain of mental diseases, the smaller becomes the rôle of the psychosis, but the greater that of the demonstrable brain change.

MILL.

**Sero-Cyto-Diagnosis in the Diagnosis of the Various Insanities**—J. D. O'BRIEN and O. D. TATJE, *Cleveland Med. Jour.*, Nov., 1910.

Of all the elements of diagnosis, the serological, chemical and cytological examinations of the cerebrospinal fluid approach nearest to the nature of an anatomical examination of the central nervous system. For the present it should be remembered that the results of such examinations, as in a case of paresis, are to be questioned, if the histological examination fails to show the picture of what we understand as the cortical changes of paresis. If the Wassermann reaction is to be considered biologically specific for syphilis, one can

11

readily see that syphilis occupies an important position in the etiology of all insanities. Authors consider the cytological examination with increased proteid content a more important diagnostic feature of paresis than the Wassermann reaction alone. WESTERN.

**Residual Delusions after Delirium Tremens**—G. STERTZ, *Allgemeine Zeitschr. f. Psychiatrie u. psychisch-gerichtliche Medizin*, Vol. LXVII, No. 4.

When the acute symptoms of delirium tremens have disappeared, some delusions which originated in the acute stage may still persist for days or even weeks. The prognosis is favorable.

WESTERN.

**Dementia Paraplegica**—G. DENY and J. LHERMITTE, *Semaine méd.*, 1910, No. 50.

Besides senile dementia paraplegica there occurs in the adult a type of dementia with progressive paraplegia which is of non-lacunar origin, depending, however, upon a chronic encephalitic process extending from the frontal lobe to the paracentral region. Its cause is a chronic intoxication. ZIMMER.

**Blood-pressure Determinations in Patients with Manic-Depressive Insanity and Dementia Præcox**—P. WEBER, *Archiv f. Psychiatrie u. Nervenkrankheiten*, Vol. XLVII, No. 2.

Manic and depressive patients exhibit identical behavior of blood pressure. They have higher pulse-frequency, increase of pulse-pressure, of the diastolic and especially the systolic pressure. Patients affected with dementia præcox generally exhibit low pulse-frequency, low pulse-pressure and low diastolic and systolic pressure. In a few patients with dementia præcox the blood-pressure changes are the same as in manic-depressive patients. WESTERN.

## URINARY ORGANS—MALE GENITALIA

**Diagnosis of Renal Tuberculosis**—A. HOFMANN, *Zentralblatt f. Chirurgie*, 1910, No. 51.

After all the usual methods did not warrant a conclusive diagnosis, author resorted to skiagraphy, which demonstrated a much enlarged left kidney. At the operation it was noted that the size of the kidney corresponded exactly to the shadow on the skiagraph. The case was one of tuberculosis. Author advises skiagraphy for the recognition of renal tuberculosis. MILL.



**Giant Cells in the Urinary Sediment of Urogenital Tuberculosis—H. STEINDL, Wiener klin. Wochenschr., Dec. 8, 1910.**

The urinary sediment in urogenital tuberculosis contains occasionally formations which must be considered to be giant cells or preliminary stages of the latter. Author believes that the presence of such formations is sufficient proof for the existence of a tuberculous focus in the urogenital tract; the occurrence of these giant cells he deems of greater diagnostic significance than even the demonstration of tubercle bacilli.

MILL.

**Giant Cells in the Urinary Sediment in Urogenital Tuberculosis, Second Communication—H. STEINDL, Wiener klin. Wochenschr., Dec. 22, 1910.**

Author supplements his first communication on this subject by stating that according to Bizzozero polynuclear cells may normally be present in the urinary sediment, and that the import of their occurrence must be greatly minimized.

MILL.

**FEMALE ORGANS OF GENERATION—PREGNANCY—  
PARTURITION—INFANTS**

**The Mutual Relation between Affections of the Female Genitalia and Gastric Diseases—VÉRTES, Monatsschr. f. Geburtshilfe u. Gynäkologie, Vol. XXXII., No. 1.**

Gastric affections occurring synchronously with diseases of the female organs of generation arise mostly independently of the latter. The clinical picture of gastric disease of reflex-neurotic origin does not exhibit any characteristic features.

MILL.

**Tuberculosis and Menstruation—D. J. MACHT, Am. Jour. Med. Sci., Dec., 1910.**

The effect of the tuberculous process on the menstrual function is manifested chiefly in changes in the menstrual type. The patients may menstruate regularly to the end, especially after the age of thirty-five, or the patients may have amenorrhea passing into complete suppression of the menses. Quite an appreciable number, 4 to 6 per cent., may have menorrhagia preceding the amenorrhea. Some cases of dysmenorrhea are of a purely tuberculous origin, and are relieved by tuberculin treatment. The effect of treatment in general is to restore a normal type of menstruation. In regard to the influence of menstruation on the tuberculous process, author states that menstruation is manifested by aggravation of all symptoms, and accentuation of physical signs. The effect of ovulation may continue after the menstrual flow has been suppressed. Periodic hemoptysis and other hemorrhages in tuberculous patients may occur simultane-

ously with the menstrual flow, or may take the place of the latter. True vicarious menstruation does occur, but it is exceedingly rare, so that in most cases of vicarious hemoptysis, a tuberculous lesion is to be expected. SACHS.

**Pyometra**—H. CROOM, Practitioner (London), Nov., 1910.

By pyometra is meant the collection and accumulation of pus in the uterine cavity with or without occlusion of the os. This condition is rare in children though it may occur as a result of the agglutination of the labia in children suffering from vulvitis. Pyometra occurs in virgins as a primary condition, but in the majority of cases is secondary to the condition of hematometra, micro-organisms gaining access to the blood causing its putrefaction, and so forming pus. Pus may accumulate in the uterus as a result of acquired atresia after development of the catamenia. Author reports a case following the application of too strong an escharotic to the cervix in the treatment of an acquired hematometra. The connection between pyometra and cancer is obvious, and well recognized. It seldom occurs with primary cancer of the fundus. Pyometra is by no means uncommonly associated with senile endometritis, and the retention of pus in the uterine cavity is the cause of the colicky pains so often associated with this disorder in old women. SACHS.

**Hematoma of the Ovary, with Reports of Eighteen Cases**—J. P. HEDLEY, Jour. of Obstetrics and Gynecology of the British Empire, Nov., 1910.

Very little has been written on the subject of hematoma of the ovary. It is a comparatively common disease of the ovaries of women during the child-bearing period. Hematoma of the ovary is one of the causes of pelvic pain which is so frequent a symptom in gynecologic practice. The pain is often indefinite in position, the swelling of the ovary may be small, and unless a thorough examination is made, there is danger of attributing the symptoms to "neurosis." The condition when once established, appears to be progressive, so that it is important to make an early diagnosis and thus save the patient perhaps years of discomfort or pain. Hematoma of the ovary and the conditions which lead to it are associated with a marked diminution in fertility. Menstrual disturbances are common. In nine cases of the author's series, there was a definite menorrhagia. Pain is the most prominent symptom in this condition, although it may occasionally be absent. The pain may be sudden or severe at the onset, or the first pain may supervene at the menstrual period and reoccur at subsequent periods, or the patients may complain of a persistent dragging in the lower part of the abdomen and back. On examination of the abdomen, many of the patients complain of tenderness in one or both iliac regions, or over the whole of the

lower part of the abdomen. On bimanual examination, in all the reported cases with the exception of three, in which the uterus was enlarged by fibromyomata, swellings varying from the size of a hen's egg to that of a coconut were found in the pelvis. The fixation of these masses was a striking feature in most of the cases. SACHS.

**Desmoid Tumors**—R. MORISON and H. DRUMMOND, *Lancet*, Nov. 5, 1910.

Desmoid tumors originating in the abdominal wall are generally situated in the upper half of the rectus muscle. These tumors may be mistaken for abdominal growths, unless the possibility of their presence is taken into consideration. They are very frequently associated with pregnancy. A desmoid tumor is firm, sausage-shaped, non-tender, possessing mobility across but not in the direction of the fibers of the relaxed muscle with which it appears to be associated. It becomes fixed when the muscle is made tense. Such a tumor occurring in a pregnant woman is very suggestive of a desmoid tumor. SACHS.

**Three Bad Prognostic Signs in Eclampsia**—W. FLETCHER, *British Med. Jour.*, Oct. 29, 1910.

Three bad prognostic signs in eclampsia are: a small amount of albumin in the urine, a high temperature, and postpartum onset of symptoms. SACHS.

**Pyelocystitis in Infancy**—E. B. FRIEDENWALD, *Arch. of Pediatrics*, Nov., 1910.

This study of pyelocystitis in infancy is based upon a series of 80 cases observed in the Städtische Kinderasyl in Berlin; it is made up largely of young infants, many of whom suffer from nutritional disorders, and among whom infections, particularly influenza, are very common. In this series author found 58 females and 22 males. This gives a percentage of  $27\frac{1}{2}$  for males, which is more than double the highest previously reported percentage of 11 by Göppert. The youngest child in this series was 11 days, the oldest 22 months. Under one month there were 3; from 1 to 3 months, 25; from 3 to 6 months, 22; from 6 to 9 months, 14; from 9 to 12 months, 10; and over one year 6 cases. The colon bacillus is the common exciting cause of this condition, and through it received the name under which it is best known, colicystitis. An infection or acute nutritional disorder preceded 59 of the cases; there were only 7 cases which were not preceded by a previous serious disorder. The 14 remaining cases entered with this condition, and while it is often not possible to get a previous history, we must assume that quite a number of these had also a definite predisposing factor. Of 20 autopsies both the kidney pelvices and bladder showed pathologic

changes in 15 instances; three times the pelvices alone were involved, once the bladder alone, and in one instance there were no pathologic findings in the urinary apparatus, although the child had had pyuria 6 weeks previous to death. The lesion may consist of a simple catarrhal inflammation which quickly heals. WESTERN.

**Colon Infections of the Urinary Tract in Children**—L. PORTER and E. C. FLEISCHNER, *Arch. of Pediatrics*, Nov., 1910.

In small babies the first symptom of colon bacillus infection may be pallor and failure to gain weight. There is in some cases paroxysmal crying. There is an increasing rise in temperature, usually quite slight. In the urine are found motile bacilli, and more or less abundant pus cells. The most interesting symptoms connected with this condition are those referable to the gastrointestinal tract. The babies develop anorexia; they may occasionally vomit. The stools are numerous, greenish in color, and contain mucus. This is usually the initial condition; later constipation is present. It is these gastrointestinal symptoms that so often mask the underlying condition, and these children are often subjected to weeks of treatment for colitis when the bowel condition is secondary to that of the urinary tract. If one has the patient where a microscope is convenient, an immediate examination of the urine, as quickly as it is passed, with the high power dry objective, will reveal the presence of many motile bacilli, which in over 87 per cent. of cases are colon bacilli. Specimens of urine for culture—only by culture an accurate diagnosis of the offending microorganism can be made—are best obtained as follows: in boys the urethra is cleansed as thoroughly as possible with bichloride solution, 1-2,000, and afterward with sterile water and the child instructed to urinate in a sterile basin or flask, and from this an agar tube is inoculated. In girls the external genitals are similarly cleansed, a small rubber catheter is passed, and an agar tube inoculated directly. The prognosis for life is usually good. In rare cases of marked infection of the kidney with multiple renal abscesses a fatal result may ensue. Concerning the cure, however, the prognosis must be very guarded. The symptoms may clear up promptly and yet a bacilluria with malnutrition persist. Again the bacilli may disappear from the urine to reappear in a short time. WESTERN.

**Significance of Tuberculides in the Diagnosis of Tuberculosis in Infancy**—J. S. LEOPOLD and T. ROSENSTERN, *Jour. A. M. A.*, Nov. 12, 1910.

Papulovesicular and papulonecrotic tuberculides are present in a large percentage (40 per cent. in authors' series) of cases of tuberculosis in infancy. At times the tuberculides are the only evidences of tuberculosis that are present. The tuberculides are, therefore, of great diagnostic value in tuberculosis in infancy. WESTERN.

### **Bibliography**

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THE TREATMENT OF DISEASE. A Manual of Practical Medicine. By REYNOLD WEBB WILCOX, M.A., M.D., LL.D., Professor of Medicine (Retired) at the New York Post-Graduate Medical School and Hospital; Consulting Physician to St. Mark's and to the Nassau Hospital; Formerly President of the American Therapeutic Society; Fellow of the American Academy of Medicine and of the American Association for the Advancement of Science, etc., etc. Third Edition, thoroughly revised and enlarged. Philadelphia, P. Blakiston's Son & Co., 1911.

In an age when so many ambitious medical youngsters deceive themselves into believing that the world has just waited for them to compile *the* book of a generation, it is refreshing to come across a manual from the pen of a mature and experienced clinician. Dr. Wilcox's book is truly one on the treatment of disease and yet etiology, pathology, symptomatology, diagnosis and prognosis have been by no means neglected. To therapeutics, however, and all what this implies, the work is devoted. It takes into minute consideration not only the medicinal, but also the physical, dietetic and hygienic measures which progressive physicians employ more and more from day to day. It is a safe, sane and modern exposé of the healing art, which we take pleasure in recommending to our readers. H. S.

PRACTICAL PHYSIOLOGICAL CHEMISTRY. A Book designed for Use in Courses in Practical Physiological Chemistry in Schools of Medicine and of Science. By PHILIP B. HAWK, M.S., Ph.D., Professor of Physiological Chemistry in the University of Illinois. Third Edition, revised and enlarged. With 2 Full Page Plates of Absorption Spectra in Colors, 4 additional Full Page Color Plates, and 127 Figures of which 12 are in Colors. Philadelphia, P. Blakiston's Son & Co., 1910.

The present edition of this useful little work includes a number of additional qualitative tests and quantitative methods. The popularity of this book is well deserved. H. S.





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A QUARTERLY JOURNAL DEVOTED TO THE STUDY  
AND THE PROGRESS OF DIAGNOSIS AND PROGNOSIS

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## Special Articles

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### ALLEGED PULMONARY TUBERCULOSIS; DIFFERENTIAL DIAGNOSIS\*

By A. JACOBI

New York

Is the diagnosis of tuberculosis easy? It seems to be the easiest thing in the world for those who are at the head of a tuberculosis class and wish to exhibit large numbers in their reports. A 260 pound woman with a big heart and liver called on me some time ago. She had been treated in a Greater New York tuberculosis class for six months, without a trace of the disease. I reported the occurrence to the Board of Health. After a while I was notified that the case had been taken off the list. That was all. The doctor is still the expert head of the tuberculosis classes of a borough, curing as many spurious tuberculosis cases as he pleases.

On the other hand, diagnosis is often not made, because, as F. M. Pottenger told in Pasadena, July 11, 1910, before the American Institute of Homeopathy, nothing but a superficial examination can be expected,—he says,—of physicians who are not paid enough for their work (N. Y. Med. Jour., Sept. 3, 1910). Unfortunately, superficial examination is not the only reason why a diagnosis is not made,—not even in the dead, or in the dead tissue. Only lately F. J. Matthews reported:

1. His opinion that there could be no doubt that germs invaded

\* From a paper read before the Bronx Medical Society.

the tonsil, "perhaps showing their first effect in other parts of the body" (Med. Rec., Sept. 17, 1910). Perhaps.

2. The tubercle bacillus had been found in the tonsil and, passing through it without producing lesions. He brings, however, no proof that such is the case, nor can he produce such a proof. When bacilli of all descriptions are found in the tonsils without causing any change in their tissue they have more opportunity to return to the pharynx than to pass through the fibrous capsule in which the tonsil is embedded. Indeed, their passing through is difficult. We find a Fehleisen coccus on the skin, but there is no erysipelas unless there is a break in the epidermis; any number of tuberculosis germs or diphtheria germs may be in the nares, or on adenoids, but the person is not sick at all.

Pettenkofer, the author of the groundwater theory, swallowed Asiatic cholera culture, but was not taken with cholera, and the tonsils, while they cannot help being invaded by passing microbes, serve more as temporary receptacles than as causes of access into the lymph,—or blood,—circulation. I could prove that as early as 1860, and many times since,—mainly in 1874 and in my old treatise on diphtheria in 1880. In the Archives of Pediatrics I have worked up that subject again in a paper and in an editorial (Jan. and Feb., 1903). As that magazine is quite accessible, I beg to refer to it.

Diagnosis by the tuberculin test. It is not so universally positive as it is in the cow. In the first two years of life the tuberculin test is absolutely positive for active tuberculosis,—with the exception probably of the first three months. When the result is negative, particularly after the test has been made twice, there is no active tuberculosis, except:

When the process is hematogenous, as in miliary tuberculosis and in most cases of tuberculous meningitis. Some of them may be attributed rather to a direct infection of the base of the brain from the base of the cranium, in consequence of tubercular rhinopharyngitis, through the open lumina of the lymph ducts.

Except also after a tuberculin treatment; except also in thorough cachexia; and, finally, in the course of measles (Moro).

For later years, a positive result of the cutaneous tuberculin test does not prove tuberculosis. The positive result means fever and local swelling. Toxins of any kind may cause fever, so does gen-

eral debility. Now and then tuberculous patients do not respond to the test; advanced cases yield failures quite often.

Evidently, no single road leads to Rome, and evidently our optimistic expectations of having a positive test of the presence of tuberculosis in a human organism have been exaggerated.

Our old stand-by is still what it was,—physical examination, and the appreciation of objective and subjective symptoms. The presence of tubercle bacilli in the sputum is conclusive: its absence is not.

Eight years ago I read before the Philadelphia Pediatric Society a paper with the title of "Peribronchitis and interstitial pneumonia." I quoted Stoffella, Eichhorst, Jürgensen, Heschl, Eppinger, Wagner, Grisolle, Chomel, Heitler, Marchand, Osler, Winslow-Anderson, Orth, Stokes, Corrigan, Leube, and myself. What I mean to lay before you is a frequent condition of the lungs which is often mistaken for tuberculosis, is not mentioned by those authors at all. For diagnostic purposes I think I know of nothing of equal value. As an introduction, I beg to quote from my therapeutics,—now out of print,—the following sentences.

"There are three anatomical varieties of pneumonia, mostly in infancy and childhood,—the catarrhal or lobular, the fibrous or lobar, and the interstitial. Nearly two-thirds of the cases in the young belong to the first; nearly one-third to the second; and a limited number to the third class. Not one of them, however, is always found pure and uncomplicated. Indeed, complications of the lobular with the lobar, of either of these with the interstitial, and possibly of each of them with pleuritis, are quite common. . . . Interstitial pneumonia is liable to run the most protracted course. Fever is liable to be high and prolonged over weeks and months; recovery is rarely complete; indurations and retractions of the pulmonary tissue, with bronchiectasis, are quite common." (Compare *Archives of Pediatrics*, January, 1903.)

These remarks are the outcome of clinical observations extended over dozens of years among patients of all ages. What I have opportunity to see almost weekly is as follows:—an adult, generally a man, appears with a complaint not connected with his lungs, and is examined. Another turns up with a tale of woe. He has been examined by a physician and told that his lungs are affected and unless

he goes to Colorado at once he must die. The patients never knew their lungs were affected; they have neither cough nor expectoration; their chests, however, are asymmetrical; there is a flattening on one side, depression of an apex, diminished respiration over the corresponding part of a lung, slight or marked bronchophony, slight bronchial expiration or thoroughly pronounced bronchial respiration, but *no râle*, no history of a cough, of expectoration, or of a lung disease as long as they remember. They are often persons in middle life, sometimes well advanced in years. When other cases are seen in adolescents or those out of their teens, an intellectual mother remembers that he or she, when an infant or a young child, had a pneumonia, a bronchitis, or a long ill-defined feverish disease. Not infrequently the case was a very protracted one, and many fevers would follow one another. In other cases there is no history except that which is indelibly inscribed in their lungs. Adults with the lesions I have described are numerous. I feel certain that amongst four thousand office patients I meet perhaps thirty each year. The majority are adults; their history dates back to infancy. Others are children with the same local lesion but a more distinct record. A previous illness is remembered; in many cases the diagnosis was not made.

What I aim at is that these cases should be appreciated at their full but no exorbitant value. While a great many are the results of a complication of intrathoracic diseases, there are many that run an independent course in the connective tissue either of the bronchial walls or the trabecular or interalveolar septa. There will be plenty of opportunities to verify my experience of a lifetime on the part of those who are not wedded to the thought that the symptoms described by me are invariably due either to tuberculosis or to pleuritis.

In the *symptomatology and diagnosis* grave mistakes are made even by masters. W. v. Leube, in his "Specielle Diagnose der innern Krankheiten," fifth edition, Vol. I, p. 138, has the following remarks: "The diagnosis of interstitial pneumonia is almost always of very little clinical importance. It mostly serves only to complete that of other pulmonary diseases. It accompanies the various inflammations of the respiratory organs, chronic bronchitis and pleuritis, the suppurating, gangrenous and caseous processes and neoplasms, and rarely the croupous and catarrhal processes which affect the surface

of the alveoli only. A greater importance belongs to interstitial pneumonia when it follows the inhalation of metallic and other dusts and is connected with syphilis." This is almost all wrong or only partially right.

Now what I have tried to suggest or communicate is the much-neglected fact that so-called interstitial pneumonia, or, what I should prefer to call it,—pulmonary hyperplasia with secondary cirrhosis, is a frequent and frequently independent disease. Moreover, that the full recovery from it, at least as far as the life and comparative health of the patient are concerned, is by no means an uncommon occurrence; that indeed a certain measure of pulmonary cirrhosis is not an obstacle to comfort and activity, and certainly has nothing in common with tuberculosis and should be distinguished from it. I have several times had the experience of having statements of mine overlooked, or not appreciated, or rediscovered, because I was too vain, or too indolent to publish my facts once a year. I forgot what I read in Cicero *pro archia poeta* 65 years ago, viz., that the multitude have dull ears. This time I refer to the subject because a few months ago the great Medical Society of Berlin was treated to the relation of a case—a single case—which was taken for tuberculosis, had to be taken for tuberculosis, and to the surprise of the speaker, was not.

Interstitial pneumonia, when independent, is mostly in an upper lobe; pleuritis, more frequently over a lower, or all over. The diagnosis of an early complication of pleuritis and interstitial pneumonia may easily be missed at first; later, when the symptoms of pulmonary alteration become more evident, it is again in interstitial pneumonia the upper part that is most affected. The diagnosis may sometimes become more difficult on account of the deformities following either; still, the flattening of the surface in interstitial pneumonia is mostly referable to the chest wall—that means principally the ribs—while pleuritis is apt to result in atrophy of the muscles of the chest and the shoulder, with or without pain. This difference may mislead, however. But there can be only a very few cases in which, after a long time, the location of the symptoms in the upper—mostly right—lobe in interstitial pneumonia, and of those in pleuritis, friction sound included—mostly over the lower—will not lead to a correct diagnosis.

Tuberculosis is mostly found in the upper lobe, even in the apex, mostly in the right, but there are few cases in which the left is not also infected. Interstitial pneumonia is often found in the upper right lobe only. In the child, tuberculosis is apt to spread more generally than in the adult over all the lobes; indeed its deposits are frequently found in the lower lobes. Tubercular pleurisy spreads soon over the whole pleura of one side. I find it seldom bilateral. Though it be isolated and not the result of general tuberculosis, it soon gives rise to friction sounds and a very extensive, though not very marked, dulness. Chronic tuberculosis of the lungs is not rarely complicated with laryngitis (less so with enteritis); that is not so with interstitial pneumonia. Pulmonary tuberculosis is always attended by râles and by cough; in later periods the expectoration rarely becomes fetid; as a rule, interstitial pneumonia is not, except when a local dilatation of a bronchus contains putrefying expectoration. I have often been impressed with the suspicion that the observations of apex tuberculosis, not confirmed by the finding of bacilli, were mistaken; that they were, in fact, local interstitial pneumonias, which finally got practically well, with induration and retraction. Besides, many cases of tuberculosis go hand in hand with an interstitial process and will get well the more readily the more they are connected with interstitial proliferation. Many of you will remember that the action of Koch's new tuberculin was believed to consist in the rapid new formation of connective tissue, which was expected to surround and hide the bacilli and thus to render them innocuous. It proved a mistake.

Altogether, we may say that capillary bronchitis and lobar pneumonia have their symptoms below and behind; tuberculosis and interstitial pneumonia above and mostly in front; pleuritis with effusion, below and mostly behind; and pleuritis with effusion sometimes, and tubercular pleuritis always, both above and below. Atelectasis in the infant may persist, rarely by itself, but is usually followed by inflammatory processes, or by emphysema.

*Percussion.* Over the retracted apex and indurated lung there is dulness and more or less resistance to the percussing finger. Induration of the lower lobe allows the diaphragm to ascend. The liver dulness extends above its normal line and remains stationary during respiration whenever the lung is tightly adhering to the chest

wall. Secondary emphysema and bronchitis, and the cavities of fibroid phthisis, yield their well-known physical signs.

*Auscultation.* The respiration is vesicular, strongly puerile in the young; in complications with bronchitis there may be râles. This complication is frequent. It disappears and reappears in acute cases, is seldom met in the chronic. After a while the respiratory murmur becomes feeble, together with the development of the connective tissue hyperplasia. When atrophy begins, and sometimes before that time, the respiration—mostly expiration—becomes bronchial. This symptom appears late in subacute or chronic cases, but it lasts, usually forever. It is preceded by bronchophony. There are few râles, or none, in the beginning—none in those instances which remain unchanged, more or less local, and do not degenerate into fibrous phthisis, or are not complicated with emphysema or asthma. Sometimes auscultation, sometimes percussion, is more characteristic of solidification and retraction. In a great many of my cases I find the inspiration interrupted, in installments, as it were (“saccadée”). This latter symptom belongs by no means to pleural adhesion alone.

*Cough.* I wish to be emphatic, though my assertion may appear to be overdrawn. There is, in uncomplicated cases, no cough. Acute cases rarely run without some bronchial irritation, but even in this class there are many that do not cough. When there are rational symptoms and the diagnosis of pneumonia, but little cough, it means interstitial pneumonia. When the case is old, and retraction established again, there is no cough. The authors who speak of cough as a frequent and harassing symptom, or as an early symptom, who describe a dry or a moist cough, and a copious, sanguineous, or fetid expectoration, have seen—or remember—only those cases in which there was an early intense complication in which the latter played the principal part, or the secondary processes of fibrous degeneration.

The heart and blood vessels are affected in proportion to the amount and duration of the induration and retraction. Considerable atrophy of the tissue implies compression and disappearance of capillaries, incompetent circulation, cyanosis, and dilatation and hypertrophy of the right ventricle, with accentuation of the pulmonary sound. When the upper right lobe is thoroughly affected, the heart



need not be drawn upward and to the right; but the heart and the large blood vessels are more than normally uncovered and accessible to percussion. That is why the diagnosis of hypertrophy of the heart should be asserted with some mental reservation, exactly as in the cases of rachitical deformity of the chest, when the flattened side of the narrowed thorax conveys the impression of an hypertrophied heart, merely because it is more extensively in contact with the chest wall.

*Temperature.* It may be high in acute cases, and remain so for weeks; in them the bronchial respiration may appear relatively early, and nutrition may suffer quite badly. In most cases very high temperatures do not persist long. Week after week, with remissions in the morning, 101 or 102 deg. F. may be reached in the afternoon. These are the cases in which either an infectious fever, such as typhoid or tuberculosis, may be feared; or intestinal autoinfection, with its long duration, occasional erythema, frequent indicanuria, and toxic nephritis may be diagnosed. The latter is more easily eliminated than the former, i.e., typhoid, in which the recognition of the bacilli is either uncertain or impossible. When the induration is fully established, there is no temperature. I know patients of this kind who, with all their symptoms of local pulmonary cirrhosis, have not been aware of any disturbance these twenty-five years.

*Deformities of the chest* are observed whenever the induration is of long standing. They are frequent, because the patients were mostly infants and young children with flexible ribs. The apex is retracted, the upper anterior chest flattened. The ribs are close to one another; in Da Costa's experience, who evidently observed adults with complications, the deformity was most often seen over the lower lobes. The vertebræ may be more or less deviating, the scapula of the affected side lower and standing out from the ribs. The circumference of the diseased side is diminished. All this takes place in serious cases. When the upper lobe—the left, or mostly the right—is alone affected, the deformity is quite local.

## TUBERCULOUS TOXEMIA

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During the last fifty years medical research has been dedicated to a study of the originators of disease. The center of activity, therefore, was the laboratory. However, the pendulum has begun to swing in the other direction of late, and a new emphasis has been placed upon clinical observation, which had long been a negligible quantity in scientific research. It is coming to be more and more recognized that disease is not caused by the simple invasion of bacteria into the organism. Equal importance has to be attached to the mental and mechanical elements, the former influencing the circulation through the vaso-motor nerves, the latter changing the size and configuration of the inner organs and their relative position. To correlate these three factors in the causation of disease, it is necessary that the patient be carefully studied by the clinician. Laboratory research will not on this account lose any of its significance. Yet clinical observation must attain greater importance and dignity in the future. It is from this point of view that I feel justified in submitting to the profession the following observations, which epitomise the results of twelve years' clinical study and the analyses of a great number of cases presenting a great variety of symptoms and pathological changes, which, although apparently disconnected, I could trace back to one common cause, viz.: rhachitis.

As to the cause of rhachitis, I may here be permitted to make a digression. The bacillus of tuberculosis does not penetrate the placenta and, therefore, in the strict sense of the word, tuberculosis is not a congenital disease. Again we have learned, more especially through the researches of the pioneer in this very important field, Poncet, that the débris of dead tubercle bacilli are sufficient to bring about morbid changes in the osseous system and the joints which bear a striking resemblance to those caused by the presence of the tubercle bacillus itself. Although these quasi toxins have not yet been isolated,

it is logical to assume that no barrier has been provided for against them in the placenta and that consequently it has the same influence upon the fetus as upon the mother. (As to the influence of a tuberculous father, this must be decided by experimentation.) About seventy-five per cent. of all civilized people being infected with the tubercle bacillus, the number of mothers with its toxins in their blood must be proportionately great. My clinical observations have gradually brought me to the conclusion that the toxemia emanating from the maternal blood is the cause of that extremely prevalent disease among children, namely, rhachitis. Although it is rarely manifest in the newly born, it usually is found in the first year of life. Improper food and bad hygienic conditions must be regarded merely as contributory elements, not as the primary cause. Rickets in the adolescent period are probably the result of extinct tubercular deposits in the individual. That a long time is necessary for tuberculous toxemia to gain concentration sufficient to produce osseous changes is further proved by the fact that tuberculous rheumatism is found in patients with chronic pulmonary tuberculosis of long standing. The fact that rhachitis and scrofula are so closely allied that most scrofulous patients offer pronounced rickety symptoms furnishes the strongest argument in favor of my contention. For, long since, scrofula has lost the dignity of a disease *per se* and is now regarded as a product of the tubercle bacillus itself, or with more probability as a result of tubercular toxemia. I admit that my opinion as to the tubercular origin of rickets is a radical one, and one which will perhaps be violently assailed. However, I am convinced that it will gain friends proportionately to the number of observers who from this standpoint gather together sufficient clinical data. In the last three years every mother of rickety children brought into my clinic for the treatment of some osseous lesion was subjected to the Moro test and the temperature was carefully taken. It was found invariably to be between 99 and 100 deg. F. The Moro test in all these cases was positive. In every case there were symptoms of enteroptosis.

The French method of classifying many varieties of disease under one head, as has been done with the expression *arthritismus*, has been found to be eminently serviceable. I would suggest that we adopt an analogous classification to cover that great variety of

morbid changes produced in childhood and adult life by rhachitis, and that we call it rhachitismus.

The deformities produced by rhachitis of tubercular origin must necessarily have a tremendous influence upon the development, configuration and functions of the inner organs during the growing period. Apparently insignificant deformities of the spine and ribs cause a permanent impairment of the nutrition of these organs, and their functions must inevitably be altered during the whole period of individual life. This may be illustrated by a simple experiment. Fill a bowl with water and freeze. The ice cake then formed will take the exact configuration of the inside of the bowl, the water having conformed to the minutest dent in it. His, the great anatomist of Leipzig, has demonstrated that the internal organs are semi-liquid in life, the liver being so much so that it will receive the imprint even of a hollow organ like the duodenum. Hence it is obvious that all internal organs must conform to the configuration of the osseous system and thence comes the great influence of even slight deformities of the spine and ribs upon the nutrition and development of these organs during the growing period.

There are two types of deformity which, though emanating from the same source, are clinically very distinct. There is, first, the straight spine with its physiological kyphosis and lumbar lordosis only slightly indicated. We find here the long thorax which is characteristic of the habitus tuberculosis, lack of muscular development and the various forms of indigestion. The second variety shows increase of the physiological dorsal kyphosis and lumbar lordosis, with the same lack of muscular tonus, yet with good development of the subcutaneous fat. In both types the upper aperture of the thorax is narrowed down—one might correctly speak of an osseous stenosis—the shoulder blades protrude like wings in consequence of lack of muscular strength. The fossæ supra- and infra-clavicularis are visible, the cervical glands are palpable and enlarged in some cases to the size of a hazel-nut. All these cases are characterized by a rise of temperature up to 100 degrees, or even more, and a lowering (ptosis) of the abdominal organs, especially the right kidney. These changes begin when the child enters school, they become more aggravated every year until approaching the adolescent period, the spine gives way under the weight of the upper extremities and the head. The

sequel is a lateral rotary deviation of the spine; assuming one of its many degrees, or a decided kyphosis of the dorsal spine. The patients of the latter type are popularly designated as round-shouldered. This form is more prevalent in the male sex. The literature on deformities of the spine and ribs is voluminous, and even if my theory should prove to be erroneous, it will at least have served a purpose in bringing about some unity and simplification in clinical research. In this ocean of literature there are buoys. Virchow in the fifth volume of his Archives has called attention to the arrested development of the heart and aorta in fast-growing children and has pointed out as the cause of their anemia the relative smallness of the lumen of the aorta. Freund, who was for many years obstetrician and gynecologist in the University of Strassburg, called attention fifty years ago to the part which the upper aperture of the thorax plays in the causation of tubercular invasion of the ischemic apices of the lungs. Schmorl, the Dresden pathologist, describes cases where the first rib had left a furrow in the apex of a lung which was invaded by the tubercle bacillus. Glénard, the great clinical observer of Lyons, has coined the expression "enteroptosis" for the habitual lowering of the abdominal organs. It is now an established fact that the so-called habitus tuberculosis, which we have learned to be of rickety origin, is identical with this habitus enteroptosis.

Enteroptosis is always the sequel of preceding rhachitis, the course of development being as follows: rhachitis is produced by toxins emanating from the tubercle bacillus in the maternal organism. It is not a circumscribed clinical picture but embraces a great variety of changes in the osseous and lymphatic systems, which result in deformities. The deformities of the spine in turn favor the settlement of tubercle bacilli in the system and alter the relative positions of the internal organs. In addition they are an impediment to the proper development of the heart and the lungs. Deformities of the lower thoracic and lumbar spine cause a lowering of the abdominal and pelvic organs and a disturbance in their proper nutrition. It is well known that enteroptosis is found in one out of five women. The affection does not seem to be of equal frequency among men, yet I have not seen a single case of tuberculosis in men where the signs of previous rhachitis and enteroptosis were missing.

While enteroptosis is the cause of a great many pathological

changes in later life, it is difficult and often impossible to establish the fact that rhachitis had been present in early childhood. A sure sign is found in the shape of the sterno-clavicular joint. The head of the clavicle is too bulky to fit snugly into the manubrium sterni, and in drawing back the shoulder a gap occurs between the two ends of the joint. Another material help to the diagnosis is the astragulo-tibial joint. The middle foot rotates outward when charged with the weight of the body. These cases are wrongly called flat foot. Uniform enlargement of the thyroid gland accompanies these findings. In later years this deformity makes life miserable for persons who weigh a good deal or whose occupation obliges them to be constantly on their feet. We are as much justified in resorting to operative relief in these cases as in cases of hernia. The best fitting insoles are mere makeshifts and afford only temporary relief. Uniform enlargement of the thyroid gland is also a manifestation either of tuberculous toxemia or of latent tuberculosis. It is quite common to advise operations for goiters, but before doing so, it is essential to use tuberculine, in order to establish beyond a doubt the biological cause of the enlargement. The following is a case in point:

Miss A. O'D, age 26 years, bookkeeper. Health good up to two years ago, when I treated her for a slight lateral deviation and increased kyphosis of the dorsal spine. In September 1909, she was seized with an attack of extreme nervousness and high fever. When I saw her in my office, her temperature was 103 deg. F. Pulse could not be counted, hands trembling, profuse perspiration, uniform goiter, slight exophthalmos, infiltration of apices of both lungs. Clinical diagnosis: acute exophthalmic goiter. Treatment: patient was kept on her back outdoors with proper nourishment for two months. Pulse came down to about 100; temperature to normal in the morning. Then injections of tuberculine TR were made. Each injection was accompanied by a rise in temperature and an increased swelling of the thyroid gland, which reached its height three days after the injection and then decreased below the size prior to the injection. No other medication was used. Within a year the patient was completely cured of the clinical symptoms of Graves' disease, while the lesion of the lungs persisted. According to the observations of Poncet and Leriche it can no longer be doubted that there is an intimate connection between tuberculous toxemia and en-

largement of the thyroid gland. My own observations confirm all their statements in this connection. If the labor of these authors was better known to the profession, much useless sacrifice of thyroid tissue might be avoided. Of course, colloid cysts and neoplasms of the thyroid gland can be removed only by operative measures. To remove sections of an uniformly enlarged thyroid gland is a grave mistake and should be generally condemned.

Enteroptosis develops in the wake of the osseous deformities of the spine. Therefore it is manifest long before the grosser deviations of the spine become established. It must accompany every case of scoliosis. I. Israel, in his surgical clinic of diseases of the kidney, has connected both affections as follows:

"Dislocation of the kidney is not infrequently caused by a deviation of the lumbar spine. The space allotted to the kidney becomes narrowed to such an extent that it is dislocated downward, and once mobilized, it sinks lower and lower in the abdominal cavity. The deformity consists chiefly of a lumbar scoliosis, with its convexity to the left, in which the lower thoracic vertebræ participate.

"Two factors are at work to narrow down the resting-place of the kidneys: First, deviation and rotation of the bodies of the vertebræ to the left; second, the difformation and change in direction of the lower ribs diminish the transversal diameter of the thorax."

"In pronounced cases of scoliotic dislocation of the kidney it is impossible to luxate the kidney back into its former resting-place, because there is no space left for its return. *Even slight lateral deviation of the spine is sufficient to produce a dislocation of the kidney.* I was often surprised in operating to find pronounced torsion of the vertebræ, much greater than the slight lateral deviation of the spine would have led one to suspect. This torsion restricts considerably the space for the kidneys."

Nicoladoni, late professor of surgery at Innsbruck, in his excellent work on the "Anatomy and mechanism of scoliosis," describes the changes of the inner organs as follows:

"It is apparent that scoliosis of the thoracic and lumbar segments must abbreviate the thorax and the abdominal cavity by the amount of loss in height caused by the lateral deviation of the spine. In those cases the lower ribs touch the spine of the iliac bone, the

abdomen widens out, while the diaphragm is pushed forward to make room for the voluminous abdominal organs. The right side of the thorax becomes narrow, the right lung is compressed and made partially impermeable to air. The position of the pylorus is lowered; the greater and the lesser curvature of the stomach assumes a vertical position; the root of the mesentery is in a perpendicular position."

The lowering of the kidney predisposes to chronic and acute inflammation and to that mere mechanical disturbance which we call hydronephrosis. The lowering of the liver causes a disturbance in the outflow of bile and favors the formation of gall-stones with their sometimes sinister consequences. In most families in which there are members afflicted with scoliosis I have observed there are other members suffering from gall-stones and other ailments attributable to splanchnoptosis. The formation of ulcer of the stomach and duodenum is undoubtedly due to disturbances in a certain branch of the arterial blood supply. Pronounced enteroptosis was invariably present in all cases where I have seen gall-stones combined with ulcer of the stomach. In my clinic I have often demonstrated mobility of the kidney beyond the physiological range in children under twelve years of age. Diastasis of the recti muscles, which was once alleged to be the cause of enteroptosis, was observed in all those cases. The diastasis is caused by a widening of the lower aperture of the thorax in consequence of a kinking-in of the ribs at the place of insertion of the diaphragm. The deformities in all these cases are easily traced back to the presence of rhachitis. (Another cause for the dyscrasia which we call rhachitis is probably congenital syphilis. The sharp angular deformities of the long bones, combined with sclerosis of the bones, are of syphilitic origin. I have never seen these deformities in combination with scoliosis of the spine. Therefore, for practical purposes it is well to remember that rhachitis of syphilitic origin is rare in comparison with that produced by tuberculous toxemia.)

The child who begins to develop round shoulders with subsequent hollows above and below the clavicles is in urgent need of treatment. Admonition on the part of parent and teacher to sit straight and to walk erect is futile, as the child lacks the muscular strength to maintain the proper relationship of ribs and vertebrae. In addition, the upper ribs, with the cartilage and bones, are re-



tarded in their growth; the muscles do not develop. This part of the thorax hardly follows the respiratory excursions. Hence the upper lobes of both lungs are not properly ventilated. The arterial blood supply and the lymphatic circulation are also reduced to a minimum. The vital capacity of the lungs, which expresses in numbers the difference between maximal inspiration and maximal expiration, is lowered to a considerable degree. The upper air passages are sometimes obstructed by large tonsils, adenoid growths and chronic nasal catarrhs. From all this it is easy to see how, in the upper lobes of the lungs, poorly supplied with oxygen and clogged with an accumulation of mucus, the tubercle bacillus will find a medium which invites its settlement and multiplication.

The only method of promoting the retarded growth of the upper part of the thorax consists in the speedy removal of all obstruction in the fauces, followed by energetic mechanical treatment of the bones, joints and muscles of the thorax. This treatment has to meet three indications: first, complete mobilization of all of the joints between the vertebræ and the ribs; second, active and passive exercise of the respiratory muscles; third, making permanent the results of this treatment, not by means of rigid apparatus, but by elastic bands properly applied. I consider this latter method to be a powerful adjunct in the modern treatment of deformities of the spine. In order to be of lasting benefit, the treatment must be started before the tubercular invasion has occurred. Pediatricists have observed that the habitus tuberculosis will develop in children who have been confined to bed for a long time by diseases not at all affecting the respiratory apparatus. On the other hand, it is comparatively easy to transform, in a short time, a distinctly tubercular and enteroptotic habitus into a normal one through proper mechanical treatments. The best adjunct of these are vocal lessons.

When the above facts are once generally accepted, the surgery of the osseous system will attain the rank which it merits. Public health officers and general practitioners are equally interested in fighting tuberculosis. Early treatment of the great number of children with undeveloped chests will deprive the tubercle bacillus of its most fertile soil. The welfare of the community imperatively demands the medical supervision of school children, and timely measures to be taken against deformities of the spine and ribs. For this

purpose a large appropriation is necessary. The ultimate result of this expenditure will be a material decrease in the amount of appropriations now necessary for charitable institutions and in the number of inmates of insane asylums, tuberculosis hospitals and poor-houses.

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## THE DIAGNOSIS OF SOME UNCOMMON INTRAABDOMINAL CONDITIONS IN EARLY LIFE

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It is not my purpose to discuss in this paper those rare or anomalous conditions which, although they are interesting as medical curiosities, are very seldom amenable to treatment.

From the practical standpoint, however, there are a number of conditions occurring in the abdomens of infants and children which are worthy of our attention. These children are presented first not to the surgeon or pediatricist, but to the general practitioner for help or advice. The duty devolves upon him to determine if he has an uncommon condition to deal with. He may then elect to seek counsel of the specialist for corroboration of the diagnosis and as to the plan of treatment to be pursued.

In children, delay in diagnosis too often spells death, and the statistics of the surgeon can now only be further reduced if we quickly recognize the true condition and institute treatment before too much damage has been done. In going over my case-book for the last ten years, one is struck with the fact that many of these abdominal conditions occurred in children under two years of age; that their symptoms were misinterpreted or that the physician's attention was directed to the babe because the mother had noted some unusual appearance in her offspring.

The habit of allowing parents to focus the attention of the physician on some particular region which is under suspicion should be avoided.

To examine a child that is not entirely undressed is to expose oneself to the possibility of a blunder, for the history even carefully obtained may be misleading.

The examiner who has made it a routine practice to inspect and palpate the abdomen of every one of his little patients will be in a better position to appreciate pathological changes when they occur. Adults may assist you by accurately localizing their symptoms, but children are rarely of assistance in this regard.

In this paper it will be my object to emphasize mainly those points in the diagnosis which are peculiar to early life and to call attention to certain conditions which often go unrecognized because the possibility of their presence has not occurred to the examiner.

Chief among the conditions which are worthy of our attention in this regard are intussusception, appendicitis, peritonitis and Meckel's diverticulum.

Invagination of the gut occurs much more frequently than is recognized. The majority of cases are found in poorly nourished infants during the first year of life, and up to the sixth year it appears more often than at any other period. Children are predisposed to this condition because they have more active peristalsis taking place in a gut which has poorly developed muscular and elastic tissue and which, furthermore, is only slightly attached at its cecal portion to the iliac fossa.

These anatomical differences also account for the fact that the ileo-cecal type of intussusception is the most common and in extent usually involves greater portions of the gut, sometimes protruding itself from the rectum. The diagnosis of the acute forms is sometimes extremely simple, and again in other cases puzzling. If the characteristic sausage-shaped tumor is present (usually in the left iliac fossa), or if the invaginated gut protrudes through the rectum these objective signs coupled with the character of the dejecta, which are free from feces and are composed only of mucus and blood, confirm the diagnosis. The difficult cases to diagnose are those in which there is no readily appreciable tumor. The diagnosis here is made by recognizing the constitutional sudden shock which the infant has

received. The erstwhile happy baby suddenly screams with pain, violently kicking its legs and shows signs of distress and prostration. The face is pallid and drawn, the pulse rapid and feeble, the vomiting projectile in nature quite closely follows the colicky pains.

It is important for the diagnostician and the surgeon also to recollect that the symptoms will vary according to the portion of the gut involved. For example, if the large intestine is invaginated, the pains are continuous, extremely severe and prostrating; while in other portions of the gut the paroxysmal pains may cease for a time, so that the child may even resume its desire to play.

The material vomited usually consists of food at first, later bile-tinged mucus, and finally mucus and blood appear if the efforts are powerful and frequent. In invaginations of the upper portion of the small intestine it is our experience that the vomiting comes on earlier, and is soon blood-tinged and in the latter stages may contain fecal matter.

More helpful than the vomiting is the blood admixture in the mucus-laden dejecta—these do contain a small amount of feces at first, and even some gas may come through the invagination at first. It is during the summer months when gastroenteritis and ileocolitis are commonly seen, that mistakes are made mainly because the physician expects evidences of complete obstruction and a tumor mass. Furthermore the chances for recovery are lessened by such treatment as purgatives which would be necessary and appropriate for acute summer diarrheas. Rectal examination may disclose the tumor which could not be felt through the abdominal wall.

At this point I wish to emphasize the importance of rectal examination in children, a procedure which is so often forgotten in early life. The pelvic viscera are at this time almost wholly abdominal and the index finger assisted by bimanual palpation has a wide range. The sacrum and rectum are almost straight. The pulsation of the external-iliac artery is a reliable guide to the proximity of the ovaries. The diseased appendix, new growths of the viscera, stones in the ureter and even adhesive inflammatory exudates are appreciable after a little practice. The younger the child the greater the range; the hypogastric, iliac and umbilical regions are explored with little difficulty. For example—the writer was able to palpate defi-

nitely through the rectum a pyloric tumor in an infant six months of age.

The importance of bimanual rectal exploration in early life I wish to keep before you, as it enters into the diagnosis of most of the conditions we will discuss in this paper.

The diagnosis of intussusception therefore may be made from the sudden symptoms of shock, pain, character of stools and vomitus with or without a palpable tumor mass. A blood examination, while it may be of assistance should not be waited for, as operative interference at the earliest possible moment is essential for the preservation of life.

There are relatively a larger number of cases of peritonitis observed in children, and it is my belief that this is so, because inflammations of the vermiform appendix are not diagnosed early and often enough. The appendix is longer and more twisted on itself in early life than in adults and when diseased the pain may be localized at areas outside of McBurney's classical point. There may only be general abdominal pain or sensitiveness, and the examiner must depend on careful palpation to determine rigidity of muscle which is so helpful in the diagnosis. Here again the well-greased finger passed through the rectum may define the swollen and highly sensitive appendix. Suppuration occurs easily and a localized mass formation may be found walling off the structure. I shall not dwell here for lack of time on the subjective symptoms of appendicitis in childhood; suffice it to say that I have seen a child who felt quite well and was willing to walk about who had an appendix ready to rupture and another whose appendix showed perforation within twelve hours of the inception of the trouble. Right-sided lobar or central pneumonia causes in my experience the greatest confusion in diagnosis. The pleuritic involvement causes pain which is referred to the right iliac region, but the absence of muscle rigidity, the higher temperature and respiratory rate with the physical signs will differentiate the two conditions.

Peritonitis resulting from extension of this inflamed process is indicated by increased abdominal rigidity, incessant vomiting, distension and obscured liver dulness.

A differential blood count is particularly helpful in a case of abscess formation, for, besides the fluctuation which *may* be elicited,

there will be an increase of the percentage of polymorphonuclear leucocytes to eighty or higher.

The mortality to-day is directly dependable upon the early diagnosis and resort to surgical treatment. Even those who would advocate delay in certain adult cases concede the necessity of immediate surgical interference in the case of the young.

The diagnosis of the acute forms in infancy are too often made only at necropsy. This is so because of the uncommonness of the affection, the meager history obtainable (if any), the lack of distinctive physical signs, and the inability of the patient to relate subjective symptoms.

Fortunately, acute peritonitis is not a frequent occurrence among children, although in the newborn it is not as rare as is commonly supposed. Through the umbilicus pathogenic bacteria gain their entrance and cause peritoneal infection.

The streptococcus and the bacterium coli communis can be held responsible for the majority of the cases occurring in the newborn. When a general sepsis results the diagnosis is not as difficult as when the infection is localized in the peritoneum.

In the newborn, the disease must be considered when there is a localized umbilical infection followed by a sudden abrupt change in the infant's condition. The extremely rapid gasping breathing may first attract the attention of the attendant. The infant cannot or will not nurse, the temperature is persistently high, 104 to 105 deg. F., with a rapid, weak pulse. The position assumed by the infant is one of tension. Its legs are drawn up and sharp pain is elicited by attempts to even gently move the legs. The breathing, if closely observed, is seen to be mainly costal in type and extremely shallow. The abdominal distress makes deeper palpation almost impossible. The constant rigidity encountered is quite characteristic. The urine is almost entirely suppressed. Pallor soon becomes marked, and death usually results in two or three days. A similar train of symptoms occurs in the early years of life. Besides the streptococcus, we have the pneumococcus, gonococcus, colon bacillus, or the ordinary pus organisms as etiological factors. Pneumococcic and gonorrheal peritonitis are almost distinctively diseases of childhood.

The diagnosis is likely to be obscured by the underlying affection. The medical attendant is likely to center his attention on the

primary disease and is not attracted by the insidious train of symptoms in the abdomen. Invasion of the peritoneum is evidenced by sudden high increase of temperature, or a subnormal temperature, or a subnormal temperature with signs of collapse, extreme pallor, feeble rapid pulse, 120 to 180, and cold extremities. The eyes are fixed and sunken, nausea and finally bile-tinged vomiting may follow. Any attempt to give medication or food by mouth is apt to be followed by vomiting. Constipation is the rule. The postural picture is the same as that just described for the newborn, except that a tympanitic condition is more apt to occur and the young child may feebly attempt to ward off any attempts at palpation of the abdomen. The pain may be referred to the navel or localized in the iliac fossa. The leucocytes are moderately increased.

Peritonitis of gonorrheal origin should be suspected where the above train of symptoms, in a female child, are accompanied by a specific vulvovaginitis.

Pneumococcic peritonitis may result from any pulmonary disease, and especially from an empyemic process and then it occurs probably by direct infection through the lymphatics of the diaphragm. Hematogenous infection seems to be the usual mode, since pneumococcic meningitis and abscess formations are not unknown. Since the exudation of pus is in this variety considerable in amount, the diagnosis is more readily made by the finding of accumulated fluid in the lower segment of the abdomen. If recognized early and proper measures of rest and posture are instituted, encapsulation is apt to occur, and the prognosis is correspondingly improved. Paroxysmal pains, chills, vomiting, severe diarrhea, and abdominal distension are noted in the early days of the disease. On palpation, there may be fluctuation, corroborated by dulness on percussion. Pneumococcic infection of the peritoneum, though a dangerous disease, is not necessarily fatal, as the pus may discharge through the umbilicus. If, however, surgical measures are not instituted at the beginning, rapid emaciation and prostration usually take place. Diffuse suppurative peritonitis may then result, and a serious prognosis is inevitable. The diagnosis as to the exact form can often only be made by examination of the pus, which will show the presence of the specific organism.

Another condition in children (which may be classed as almost

rare) is the presence of Meckel's diverticulum. It is a congenital condition caused by the patency of the omphalomesenteric duct which does not become obliterated. The diverticula are usually found attached to the lower end of the ilium. The cord at the end of this congenital process may be free or it may be attached to the umbilicus, to the muscles or to other parts of the gut or mesentery. Careful palpation especially in a thin walled abdomen may disclose the presence of these abnormal rigid bands or a stump-like process freely movable in the abdomen. A case at present under observation has attacks resembling cyclic vomiting, which can be ascribed to the presence of a readily palpable diverticulum. In those rarer cases in which the diverticulum remains patent at the umbilicus, the diagnosis is made by the presence of fecal detritus, which is from time to time expelled at the umbilical stump. It has lately occurred to me that the feeding of bismuth in apple sauce in these cases and subsequent X-ray examination (after 48 hours) might disclose the presence of a suspected congenital diverticulum.

Another abdominal condition of interest is congenital dilatation of the colon. Hirschsprung, a Copenhagen physician, first well described those conditions due to congenital dilatation of the colon. When the symptoms are noted in the newborn they are due to a malformation of the colon which readily distends, and its walls become hypertrophied. Since the infant does not spontaneously pass meconium, the question of atresia ani arises, but examination and irrigation disprove this assumption, for feces are then passed, but only feebly and in small quantity. The infant soon shows great distension of the abdomen, the tympanitic note is marked on percussion and the infant makes little or no progress in growth and development, and usually dies of malnutrition and toxemia. A similar condition is observed which comes on later in infancy or early childhood. The first symptom noted is obstinate constipation. The abdomen is often gas-distended for short periods and later becomes permanently enlarged or "ballooned." The general health is poor, the face is pasty and the expression unhappy. The feces are constantly more or less retained, the constipation is extremely obstinate, and when the fecal masses are passed, either naturally or by artificial means, they are extremely foul, putrescent and may be covered with mucus and some blood.



These cases only rarely react to medical measures and in this event should be placed in the hands of the surgeon.

Malignant new growths in children are too seldom thought of when a child with a large abdomen presents itself. If those of us who are working in the hospitals see these cases more often it is because they are sent in as obscure, unrecognized cases for diagnosis. Sarcoma of the kidney is seen more commonly than that of any other abdominal organ, although I have seen sarcoma of the omentum and generative organs. True carcinoma I have never observed, although a few cases have been reported in the literature.

The subjective symptoms unfortunately are very slight if any. There may be no pain or discomfort until the growth has assumed large proportions and the child is brought because the parents have observed a change in the size or contour of the abdomen. Emaciation or cachexia is not noted, the anemia not being marked until the involvement is extreme.

Edwards has well said that in the child, unlike the adult, abnormal pelvic conditions are always of a serious nature. An abdominal tumor in a child should suggest either a sarcoma, dermoid cyst, or malignant or cystic degeneration of the kidney. Undoubtedly many of these growths are not recognized until puberty or adult life is reached. My attention was first called to these cases early in my professional career by a mistake in diagnosis in which instance I sent a case to the surgeon with a diagnosis of tuberculous peritonitis (in which he concurred), only to find ascitic fluid and an inoperable sarcoma of the omentum.

When the kidney is involved the diagnosis may be made by recognizing a palpable tumor in the subdiaphragmatic space on one side; not moving on deep inspiration, covered by colon with tympany, and unobscured behind. Hematuria may not occur until the disease is well advanced, and then only occasionally. This is in accord with Tussier's observations, who says that it is absent in three-fourths of all malignant kidney diseases in children.

Cures have been obtained even in well advanced cases, but if we will resort earlier to cystoscopic examination (which is possible in female children) in cases of tumor accompanied by hematuria, the diagnosis will be made earlier and more lives saved.

The vast majority of cases in which a growth attacks the kidney

are of a sarcomatous nature. The increase in size is rapid and soon produces pressure effects on the various abdominal viscera with ascites and rarely general peritonitis.

Unilateral hydronephrosis may cause some confusion in diagnosis unless the cause, usually a concretion in the ureter, is located. The X-ray examination is of service here.

Bilateral hydronephrosis or water bag kidney is a congenital condition which soon produces symptoms of uremia and death, and is due to maldevelopment of the urogenital tract.

Congenital stenosis of the pylorus is being recognized more often than formerly and the diagnosis is now made even when no tumor can be readily palpated. The diagnosis is based on the constant projectile vomiting which follows every meal the infant takes, and which persists in spite of stomach washing or other ordinary corrective measures. The infant does not gain, the stools are exceedingly small and the urine scanty. The stomach is dilated, but the intestines are quite collapsed, which is a very valuable help in recognizing the condition. If in addition a peristaltic wave can be seen passing from left to right upon tapping of the abdomen then the diagnosis is quite certain. Here again we have a condition necessitating early diagnosis, so that the infant may be saved from starvation. The treatment with paregoric (or large doses of the bromides) acts well in cases of spasms of the pylorus and even in cases of true tumor in which the obstruction is moderate. If there is no gain in weight under this treatment surgical intervention is indicated.

To sum up—I have attempted to indicate certain conditions which do occur in early life, which are not always necessarily fatal, and which, if diagnosed early enough, offer more than a fair chance for recovery.

## THE CELLULOSE TEST IN THE DIAGNOSIS OF GASTRIC ULCER

BY HORACE W. SOPER

ST. LOUIS

Extreme differences of opinion exist among clinicians as to the value of the test for occult blood in the feces and stomach contents in the diagnosis of gastric ulcer. On the other hand, it is quite generally conceded that a continuous positive blood reaction is to be expected in cancer of the stomach.

In this article the diagnosis of gastric ulcer alone will be considered and a sharp distinction made between stomach contents and feces.

## I. THE TEST FOR OCCULT BLOOD IN STOMACH CONTENTS

v. Leube,<sup>1</sup> Rosenheim,<sup>2</sup> Riegel,<sup>3</sup> Elsner<sup>4</sup> and others have pointed out that the presence of occult blood in vomitus possesses no diagnostic value.

In the stomach contents, after an Ewald-Boas breakfast, the test has led to many different conclusions. Practically all the recent text-books advise it in the diagnosis of ulcer. Boas<sup>5</sup> believes a positive reaction is indicative of cancer or ulcer, provided the expression of the contents is carefully performed. Matthieu and Roux<sup>6</sup> found it positive in acute ulcer, varying negative and positive in chronic ulcer. Stockton<sup>7</sup> states that its presence indicates ulcer. Both Elsner<sup>4</sup> and Hartmann<sup>8</sup> warn against placing any reliance on the test because many normal cases will give a positive reaction. White<sup>9</sup> in a series of fifty cases of functional gastric disorders found the test positive in fifteen, negative in thirty-five. Both Boas<sup>5</sup> and White<sup>9</sup> found the test negative in several cases of clinically positive ulcer.

As a contribution to this subject the writer kept records of the examination of the contents of the stomach for occult blood after a morning test meal in two hundred cases of functional disorders and normal stomachs.

I. The contents were removed by aspiration with a soft tube, care being taken to exclude those containing visible streaks of blood.

2. The contents were set aside until well settled, the lowest portion of the sediment was selected for examination, thus excluding the buccal and pharyngeal mucus.

3. The guaiac-turpentine test was used. The acetic acid-ether extraction was made slowly (at least two minutes).

Water and chloroform were finally added, as originally suggested by Weber,<sup>10</sup> to bring out the blue color and to add materially to the delicacy of the test.

120 cases gave a negative reaction.

80 cases gave a positive reaction.

## II. THE TEST FOR OCCULT BLOOD IN THE FECES

In clinically positive ulcer cases, Boas<sup>5</sup> found it in 58.3 per cent.; Rüttimeyer<sup>11</sup> in 51.4 per cent.; Elsner<sup>4</sup> in 50 per cent.; Siegel<sup>12</sup> in 74.1 per cent.; Friedenwald and Rosenthal<sup>14</sup> in 74 per cent.; Joachin<sup>13</sup> in 83 per cent.; Hartmann<sup>8</sup> in 100 per cent. White<sup>9</sup> found half negative, and half varying negative and positive. Friedenwald and Rosenthal<sup>14</sup> state that in 103 stomach cases, other than ulcer, only 13 per cent. were positive. Martin<sup>16</sup> emphasizes the intermittency of occult bleeding in ulcer cases. Kuttner<sup>16</sup> believes that the test has little diagnostic value. Isler's<sup>17</sup> review of the German literature shows about the same variations as quoted above.

In routine examinations of the feces of ulcer patients convalescing from hemorrhage I was struck with the frequency with which occult bleeding occurred when coarse-fibered vegetables were eaten. It was then determined to utilize this fact as a means of diagnosis in suspected ulcer cases. It is a well attested clinical observation that occult blood will disappear from the stools of ulcer patients in from four to ten days when fed on milk, soft eggs, etc. (Boas,<sup>5</sup> White,<sup>9</sup> Matthieu and Roux,<sup>6</sup> Citron,<sup>8</sup> J. D. Steele,<sup>19</sup> Friedenwald and Rosenthal<sup>14</sup>.) Moreover these patients are, as a rule, reduced to such a dietary. Therefore it is obvious that ulcer might be readily overlooked should reliance be placed on the occult blood test. Even the preliminary diet, suggested by Boas,<sup>5</sup> consisting of finely chopped white meat, purée of potatoes and white bread and butter, may be unable to produce the irritation required to cause bleeding.

Patient	Subjective Symptoms	Weight Loss	Stomach Contents		Fasting	Pain Pressure Points		Occult Blood in Feces after Cellulose Diet	Clinical Diagnosis	Results and Remarks
			HCl	Total Acidity		Epi-gastric	Dorsal			
CASE 1. Female, at. 44, 5 ft. 4 in., 196 lbs. Referred by Dr. Willard Bartlett.	Belching of gas and acid liquids. Burning pain when stomach is empty. Attacks of pain and vomiting after coarse foods.	None.	53	71	40 c.c. acid liquid. No food remnants.	Yes.	No.	Positive.	Epigastric hernia and gastric ulcer.	Operation by Dr. Willard Bartlett. Ulcer at lesser curvature. Recovery.
CASE 2. Female, music teacher, at. 46, 5 ft. 2½ in., 103 lbs. Referred by Dr. John D. Boggs.	Gaseous eructations and epigastric distention. No vomiting. No pain.	5 lbs.	20	40	10 c.c. acid liquid. No food remnants.	No.	No.	Positive.	Uterine fibroid and gastric ulcer.	Three separate attacks hematemeses following dietetic errors. Good health for past 18 months. Gained 15 lbs. in weight.
CASE 3. Male, barber, at. 53, 5 ft. 7½ in., 203 lbs. Referred by Dr. John Green, Jr.	Cramp-like pains when stomach is empty. Not influenced by character of foods. No vomiting.	40 lbs.	50	85	60 c.c. acid liquid. No food remnants.	No.	No.	Positive.	Gastric ulcer.	After ulcer cure regime of 6 weeks, perfect recovery. 2 years duration.
CASE 4. Male, retired merchant, at. 73, 5 ft. 8 in., 118 lbs. Referred by Dr. Robt. E. Schluter.	Epigastric distress. Loss of appetite. No vomiting. No pain.	30 lbs.	58	70	100 c.c. acid liquid containing food remnants and sardines.	No.	No.	Positive.	Ulcer of the pylorus.	After 4 weeks ulcer cure regime, gained 20 lbs.; occult blood disappeared from the feces. Continues comfortable on diet of soft foods. (Six months.)
CASE 5. Male, merchant, at. 42, 6 ft. 200 lbs. Referred by Dr. M. L. Klinefelter.	Belching gas and discomfort after eating. Not influenced by character of food. Hunger-pains 4 to 6 hours after meals. No vomiting.	None.	60	90	30 c.c. acid liquid. No food remnants.	No.	No.	Positive.	Gastric ulcer.	Stools were black with blood after the cellulose diet. Recovery after ulcer cure regime. Has remained well for eighteen months.
CASE 6. Male, musician, at. 26, 5 ft. 7 in., 135 lbs. Referred by Dr. John D. Boggs.	Acid eructations after eating. Cramp-like pains one-half hour after evening meal fasting. Few minutes. No vomiting.	None.	59	78	10 c.c. acid liquid. No food remnants.	No.	No.	Positive.	Gastric ulcer; luetic.	Attack of hematemeses 2 months after the diagnosis was made. Improved under antipeptic treatment, but relapsed several times. Finally lost sight of.
CASE 7. Male, mechanic, at. 37, 6 ft., 185 lbs. Referred by Dr. P. J. Heuer.	Hunger-pains 4 to 5 hours after meals, always relieved by eating. Not influenced by character of food. No vomiting.	25 lbs.	60	80	10 c.c. acid liquid. No food remnants.	Yes.	No.	Positive.	Visceral syphilis. Gastric ulcer.	Did not respond to dietetic and luetic treatment. Finally lost sight of.

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CASE 8. Female, stenographer, et. 22, 5 ft. 2 in., 101 lbs. Referred by Dr. Jackson Miller.	Continuous vomiting after all foods. No pain.	20 lbs.	80	90	Vomited during the night. Nothing in stomach.	Yes.	Yes.	Positive.	Gastric ulcer and neuritis.	Had moderate hematemesis 1 week after diagnosis was made. Ulcer cure regime. Recovery.
CASE 9. Male, grocer, et. 30, 6 ft. 1 in., 150 lbs. Referred by Dr. Jos. Grindon.	Eruptions of gas and sour liquids 3 to 4 hours after meals. Distension and cardiac palpitation. Relief after eating. No vomiting. No pains.	None.	62	112	120 c.c. acid liquid. No food remnants.	Yes.	No.	Positive.	Gastric ulcer.	After one day of the cellulose diet had severe pains vomiting of blood and tarry stools. Improved after two weeks ulcer cure regime but had severe the epigastric. He advised that he must live on soft foods to be comfortable.
CASE 10. Female, dressmaker, et. 23, 5 ft. 4 in., weight 100 lbs. Referred by Dr. D. R. Farman.	Sour taste in mouth and eruptions of gas and acid liquid. Pain and nausea 2 to 5 hours after food, followed by vomiting and relief.	10 lbs.	50	69	120 c.c. clear yellow acid liquid containing starch cells (microscopically). No sarcinae.	Yes.	Yes. Left side.	Positive.	Gastric ulcer.	Gained 10 lbs. after 4 weeks of ulcer cure regime. Despite careful feeding the symptoms of obstruction increased and finally operation by Dr. Willard Bartlett. Stellate ulcer of pylorus. Recovery.
CASE 11. Male, clerk, et. 23, 5 ft. 3 in., 115 lbs. Referred by Dr. F. Y. Tupper.	Eruptions of acid liquid and food. Nausea, vomiting of food. Cramp-like pains 1 to 3 hours after eating.	From 5 to 10 lbs.	60	95	100 c.c. strongly acid liquid. No food remnants. No sarcinae.	Yes.	No.	Negative.	Continuous hypersecretion. Atonic stomach.	Operation in March, 1900, by Dr. P. Y. Tupper. No ulcer found. Gastroenterostomy done, hoping thereby to reduce the continuous secretion of highly acid liquid. After a year of much discomfort by eruptions of bile, etc., is now quite comfortable, eating generous diet. Weight 125 lbs.
CASE 12. Female, cook, et. 30, 5 ft. 6 in., 117 lbs. Referred by Dr. Willard Bartlett.	After attacks of epigastric pain and vomiting lasting 3 years was operated upon. Gall bladder normal. Appendix was removed. Attacks of pain and vomiting particularly after solid foods recurred several months later.	15 lbs.	28 Much stomach mucus	48	10 c.c. No HCl reaction. Much mucus, leucocytes and epithelial cells.	Yes.	Yes. Right side.	Negative.	Chronic catarrhal gastritis. Atonic stomach.	Stomach supported by binder. Diet corrected. Has gained 15 lbs. and remained free from discomfort for one year, excepting two slight attacks following dietetic errors.
CASE 13. Female, housewife, et. 24, 5 ft. 3 in., 108 lbs. Referred by Dr. Hugo Ehrenfest.	Attacks of sharp pain in epigastrium followed by vomiting producing relief. Morphia required several times. During intervals has belching of gas and obstinate constipation. No jaundice.	None.	20 Much stomach mucus	40	15 c.c. faintly acid liquid. Much mucus, epithelial cells and leucocytes.	Yes.	Yes. Left side.	Negative.	Chronic catarrhal gastritis. Chronic spastic constipation.	Improved upon careful diet and enemata of oil. Severe attacks during the past year definitely traceable to gross dietetic errors.
CASE 14. Female, dressmaker, et. 42, 5 ft. 7 in., 97 lbs. Referred by Dr. P. J. Heuer.	Many dyspeptic symptoms. Nausea and eruptions of gas. Sour food masses. Occasional attacks of severe epigastric pains soon after eating solid foods, particularly meats.	10 lbs.	35	60	20 c.c. acid liquid. No food remnants.	Yes.	Yes. Left and right sides.	Negative.	Neurasthenia. Hyperesthesia gastrica. Colica mucosa.	Improved considerably under rational diet and exercises, but relapses often. Gained 10 lbs. Under observation for 2 years.

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Patient	Subjective Symptoms	Weight Loss	Stomach Contents		Fasting	Pain Pressure Points		Occult Blood in Feces after Cellulose Diet	Clinical Diagnosis	Results and Remarks
			HCl	Total Acidity		Epi-gastric	Dorsal			
CASE 15. Male, clerk, $\text{zt.}$ 22, 5 ft., 177 lbs. Referred by Dr. John McK. Dean.	Burning epigastric pain 2 to 4 hours after eating, always relieved by food. Appetite good but afraid to eat.	10 lbs.	50	70	30 c.c. acid liquid. No food residue. Much stomach mucus, epithelial cells and leucocytes.	Yes.	No.	Negative.	Neurasthenia. Atonic stomach. Gastritis hyperacida.	Improvement and relapses for a year. Finally, after change of climate and outdoor work, is perfectly well.
CASE 16. Male, street car conductor, $\text{zt.}$ 38, 5 ft. 8 in., 144 lbs. Referred by Dr. E. H. Johnson.	Epigastric pains several hours after meals. During an attack of appendicitis was operated upon. Gall bladder explored and no stones found. No signs of ulcer found. Pains recurred after the operation. Always relieved by eating. Is weak and nervous.	30 lbs.	48 Much stomach mucus	68	20 c.c. yellow acid liquid, much mucus; epithelial cells and leucocytes.	Yes.	No.	Negative.	Gastritis hyperacida.	Regulation of diet caused definite improvement.
CASE 17. Male, clerk, $\text{zt.}$ 38, 5 ft., 107 lbs. Referred by Dr. Armand Ravold.	Continual soreness in epigastrium with attacks of nausea, sour belching of gas and food, occasionally relieved by vomiting.	10 lbs.	40	60	100 c.c. yellow acid liquid. No food residue.	No.	No.	Negative.	Continuous hyperaccretion.	Regulation of diet and outdoor exercises, interdicting alcohol and tobacco, produced good recovery. (Over one year's duration.)
CASE 18. Female, housewife, $\text{zt.}$ 37, 5 ft. 6 in., 130 lbs. Referred by Dr. Justin Steer.	Attacks of acute epigastric pain radiating to the back, followed by vomiting all foods. Attack lasts about one week, recurring at intervals of several months. Very weak and nervous. Feels well between the attacks.	30 lbs.	35	70	Excessive vomiting prevented any accumulation.	Yes.	Yes. Left side.	Negative.	Pylorospasm.	Rest in bed and prolonged careful dieting finally resulted in complete recovery. (Two years duration.)
CASE 19. Female, housewife, $\text{zt.}$ 30, 5 ft. 4 in., 93 lbs. Referred by Dr. E. J. Neville.	Dull aching pain in epigastrium. Attacks of severe pain after a full meal culminating in vomiting. All foods, even milk and water, cause distress.	15 lbs.	24	48	10 c.c. acid liquid. No food residue.	Yes.	No.	Negative.	General visceral ptosis. Neurasthenia. Gastrica.	Outdoor exercise, liberal diet and abdominal support resulted in complete amelioration. Patient gained 15 lbs.
CASE 20. Female, housewife, $\text{zt.}$ 28, 5 ft. 2½ in., 150 lbs. Referred by Dr. W. A. Hardaway.	Pain of dull character in epigastrium, at irregular intervals becomes acute and radiates to each side. Vomits easily and often.	None.	15	80	Large mass food given day before at supper; weak HCl reaction.	Yes.	Yes.	Negative.	Lues. Tabetic crisis.	Acute stagnation subsided after the crisis, but nervous pains and digestive troubles come and go.

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The "cellulose test" then consists in making a deliberate attempt to cause occult bleeding for the purpose of diagnosis by feeding a diet rich in coarse vegetable fiber. Raw cabbage, sauerkraut, radishes, celery, pickles, string beans, etc., are selected. Eggs and milk are permitted, but all meats and meat soups are prohibited.

The guaiac-turpentine test was used. (For details of same consult Osler's *Modern Medicine*, Boas or Elsner's text-books or White's<sup>9</sup> admirable article.)

a. The diet was continued for a period of three days before the test was made.

b. When the reaction was positive, the feces were examined microscopically for muscle fibers, as a control; if present the reaction was disregarded.

c. The feces were passed through the sieve to determine that a sufficient amount of vegetable fiber was consumed by the patient.

In order to illustrate the clinical results, a table is herewith presented, setting forth the comparative value of the test. Ten cases of latent ulcer, in which the diagnosis was made by means of the test, are contrasted with ten non-ulcer cases whose symptomatology is suggestive of ulcer.

In addition to the above recorded cases, the diagnosis in over two hundred cases of functional gastric disorders, gastritis, gall stones, etc., was confirmed by negative reactions following the cellulose test.

Cases 11 and 17 illustrate the fact that a continuous hypersecretion does not always mean ulcer, as is maintained by Rubow,<sup>20</sup> Borgbjärg,<sup>21</sup> Oettinger<sup>22</sup> and others. Furthermore, cases 2, 5, 6 and 7 show that hypersecretion is not always present in positive ulcer.

Case 4 shows the value of the test in differentiating ulcer from carcinoma.

The pain pressure points are seen to be of very little diagnostic value.

All the cases show the futility of hazarding a diagnosis of ulcer on the basis of the subjective symptomatology.

In the series, three cases of tapeworm were encountered, all of which reacted negatively to the blood test. Guiart and Garin<sup>23</sup> report thirteen cases of trichocephalus in which the occult blood test



was positive. Further research is necessary to decide the question as to the reaction of other intestinal parasites.

In some few cases the pain produced by the diet was so intense that it could not be continued. Should this occur, it is better to feed soft foods for three days, then to give one good vegetable fiber meal.

#### SUMMARY

I. The determination of occult blood in the stomach contents is of no diagnostic import. Conclusions cannot be drawn from either a positive or a negative reaction.

II. The intermittent positive reaction, which is so often observed in the feces of ulcer cases, is probably due to changes occurring in the diet; coarse fibered foods produce the bleeding, while soft bland foods check it.

III. A negative reaction occurring after the cellulose test excludes the presence of active ulcer.

IV. A positive reaction following the cellulose test, provided that the occult blood disappears after withdrawal of the coarse food and the substitution of a soft bland diet, is indicative of the presence of ulcer of the stomach.

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## THE VALUE OF THE GLYCYLTRYPTOPHAN TEST

(A STUDY OF 21 CASES WITH DETERMINATION OF PEPSIN IN 7 CASES)

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The Glycyltryptophan test was recently proposed by Neubauer and Fischer<sup>1</sup> as a diagnostic means in carcinoma of the stomach. In order to understand the meaning of the reaction it will be necessary first to state a few facts.

Not only is free HCl frequently absent in carcinoma of the stomach, but there is often a deficit of hydrochloric acid, or, in other words, a certain quantity of HCl must be added in order to obtain a reaction for the free acid. This finding, according to Honigmann and v. Noorden,<sup>2</sup> is interesting for the reason that previously it had been assumed that in carcinoma of the stomach there was a diminished secretion of HCl. But since the total amount of chlorine is not diminished in a number of cases of gastric cancer, the absence of free HCl was explained by Reissner,<sup>3</sup> who assumes that the ulcerated surface of the cancerous growth secretes alkalies which neutralize the hydrochloric acid.

According to Emerson,<sup>4</sup> Reissner's explanation would mean a neutral reaction. This reaction, however, is usually not present; on the contrary, the total acidity is often very high. According to this author the absence of free HCl can be explained by the presence of substances, the salts of which react acid to litmus paper, and to these belong, among others, amino-acids. The ability of the latter to enter into composition with hydrochloric acid was first pointed out by Salkowski<sup>5</sup> and Klemperer. According to Salkowski, the Günzburg reaction for free HCl is negative with leucin hydrochloride. He refers to Richet, a chemist, who had asserted many years ago that the HCl of the normal stomach is bound by leucin. Although Salkowski does not think this opinion to be correct, yet,

he believes that Richet could not have arrived at such a conclusion unless he was convinced of leucin hydrochloride having the same power of digestion as an equivalent quantity of HCl.

According to Professor Müller,<sup>6</sup> the presence of a special autolytic ferment is supposed to accelerate digestion in the carcinomatous gastric contents. If a piece of carcinoma is placed in normal gastric juice there will occur, according to Emerson,<sup>7</sup> such an extensive albuminous decomposition that it will continue until the occurrence of the tryptophan reaction, while normal gastric juice without the addition of carcinoma tissue may show this reaction only if duodenal contents have been regurgitated into the stomach.

The deficiency of HCl in the carcinomatous gastric contents can, therefore, be explained by assuming that they contain end-products of proteid decomposition as well as amino-acids in abundant quantities. These amino-acids and possibly also the diamino-acids bind the HCl, and for this reason, probably, Günzburg's reaction is here negative just as it is with leucin hydrochloride.

Tryptophan is an amido-acid which gives a typical color reaction with chlorine water or bromine water, namely rose-violet. The complicated albuminous cleavage products which first have been determined by E. Fischer,<sup>8</sup> and called polypeptids, do not give this color reaction. These peptids or tryptophan in combination with them are not influenced by normal gastric juice. Hence tryptophan peptid is not decomposed in the normal contents of the stomach, but in the carcinomatous gastric juice the liberation of tryptophan takes place by cleavage owing to the presence of a peptid-splitting ferment. For the purpose of these investigations, glycytryptophan, which is an amino-acid in a peptidoid combination, seemed the most suitable to Neubauer and Fischer.

The following rules must be followed before performing the glycytryptophan test.

Gastric contents containing visible blood or giving a reaction for occult blood, cannot be used for the test, as blood ferments may liberate tryptophan from this peptidoid compound. Nor should bile-colored gastric juice be used, because the reaction might be obtained as a result of the far-advanced tryptic digestion which is going on in the duodenum, the contents of the latter having been regurgitated into the stomach. It is best to add bromine water by drops to the

filtered gastric contents. A resulting rose-violet color indicates the presence of tryptophan; and such contents must be discarded.

If there is an admixture of bile, Neubauer and Fischer suggest that the stomach tube be introduced several times in succession, until bile-free contents are obtained.

Since tryptophan may be produced from glycytryptophan by bacterial cleavage after 24 hours' incubation, these authors recommend the addition of toluol. With this addition tryptophan can only be detected after several days' incubation. Toluol is already present in the glycytryptophan bottles and they are marked to indicate to what point gastric juice should be added (about 10 c.c.).

Method.—Half an hour to three-quarters of an hour after ingestion of an Ewald test breakfast the stomach contents are obtained by introducing the tube. They are filtered and the filtered juice poured into the bottles up to the indicated mark. They are kept in the incubator at 38 deg. C. for 24 hours. Then 2-3 c.c. of the fluid are removed with a pipette from below the toluol layer and placed in a test tube, and a few drops of a 3 per cent. solution of acetic acid are added. Next bromine vapor is allowed to descend into the tube and the whole is shaken. Resulting rose color means positive reaction. Care should be taken to let the bromine vapor drop in slowly, as otherwise the coloration may rapidly disappear. If tryptophan is not liberated, a yellow coloration will usually occur as soon as more bromine vapor is added.

Neubauer and Fischer propose a second test with a solution of calcium chloride. A half-saturated solution used for the determination of indican is diluted to one-fifth its strength and added drop by drop instead of bromine vapor. Here again a rose color will appear, if the test is positive. Care is also required in performing this test. The calcium chloride solution should be freshly prepared, old ones being often decomposed.

In order not to overlook a positive reaction, it is in my opinion advisable to make a control test with an alkalized solution of commercial trypsin. In this mixture are placed a few granules of dried fibrin which may be kept in stock, the whole to remain in a test tube for 24 hours in the thermostat. This time having elapsed, it is usually possible to obtain a beautiful rose-violet color upon dropping bromine vapor into the tube. In this way the reaction in the test

tube, which contains glycytryptophan, cannot so easily be overlooked.

If the gastric juice contains 0.36 per cent. of HCl, Neubauer and Fischer maintain that no positive glycytryptophan reaction will occur, because in gastric juice containing such a large quantity of acid, the peptid-splitting ferment is destroyed by HCl. However, there will hardly be occasion for examining acid gastric juice of such strength for this reaction, because, when carcinoma is present, the gastric juice is usually either anacid or very hypoacid.

In my experiments with glycytryptophan I have followed the original technic of Neubauer and Fischer, only in a few cases, preferring the calcium chloride test, as this eliminates the inconvenience of preparing fresh solutions.

The material at my disposal consisted of 6 patients from the Beth David Hospital, 2 from the Mount Sinai Dispensary, 1 from the Beth Israel Dispensary, and the rest (12) from my private practice. The gastric contents were obtained  $\frac{1}{2}$ - $\frac{3}{4}$  of an hour after the ingestion of a test breakfast consisting of a roll and a glass of water, in accordance with the recommendation of Lyle and Kober,<sup>9</sup> who think that the tannin contained in the tea may have an inhibitory influence upon the reaction. All patients ate the test breakfast either in the dispensary or in the office and not at their homes. In all cases where carcinoma was suspected, the gastric contents were examined for occult blood. In some cases the feces were likewise examined, with the same object in view. In nearly all cases there was no visible bile color, so there was no occasion for me to remove the stomach contents repeatedly.

In part of the cases I also examined the gastric juice for pepsin, which seemed to be of interest to me for the following reasons: if a peptid-splitting ferment be present in gastric cancer, the question would arise how this hypothetical ferment would behave toward our old acquaintance, pepsin, or in other words, how both ferments would agree with each other.

To carry out the quantitative determination of pepsin, the method proposed by Jacoby<sup>10</sup> seemed to me the most convenient. This method is based upon the fact, established by that author, that a 1 per cent. salt solution of ricin becomes completely clear after the addition of pepsin. By continuous dilution of the gastric con-

tents, the limit is determined up to which a complete clarification of the turbid fluid is still attained.

The Jacoby method.—0.5 gram of pure ricin is dissolved in 50 c.c. of a 5 per cent. salt solution, and filtered. Put 2 c.c. of the ricin solution with a pipette into each of 5 test tubes and add, with another pipette, 0.5 c.c. of a decinormal hydrochloric acid solution. Each tube now contains 2.5 c.c. of a turbid solution. The filtered gastric juice is diluted to one-hundredth of its strength, and this 1 per cent. juice serves as mother solution.

The first tube receives 0.1 c.c. of the mother solution and 0.9 c.c. of distilled water (dilution 1/1000); the second tube 0.2 c.c. and 0.8 c.c., respectively (dilution 1/500); the third tube 0.5 c.c. and 0.5 c.c., respectively (dilution 1/200); the fourth tube 1 c.c. of mother solution and no water (dilution 1/100); and the fifth tube, which serves as control, holds nothing but distilled water.

If carcinoma is suspected, the test is made with two further dilutions, namely 1/50 and 1/20. All the tubes are placed in the incubator at body temperature, and after three hours it is noted up to what dilution the mixture forms a clear solution. If the fluid in the tube, containing the 1/20 dilution, is not clear, no pepsin is present in that particular gastric juice.

#### CASES FROM BETH DAVID HOSPITAL

Case I. B-tz, Bernard, aged 53 years, admitted July 5, 1910. Family History. Mother died from gastric cancer. Personal History. Patient smokes to excess. Bowels constipated, especially for the last 3 years. Complaints on admission, in order as noticed by patient: (1) loss of appetite with bad taste in mouth since 11 months; (2) loss in weight; fatigue; (3) for last 3 months patient feels constriction in the chest, noticed especially while taking solid food, lately also on taking fluids.

Physical examination did not reveal any mass in the abdomen. Examination of stomach contents showed on 3 occasions: free HCl, none; lactic acid, strongly positive; total acidity, 14, 16, 16; glycyl-tryptophan, twice positive, once negative; pepsin, in 1/20 dilution clear; microscopically no bacilli, a few pus cells.

Clinical Diagnosis. Carcinoma of the lesser curvature of the stomach.

In September, patient was seen at his home. There were present marked cachexia and enlarged liver (metastases). He died October 26, 1910, under the signs of cancerous cachexia.

The glycytryptophan test was twice positive, once negative. With one of the positive reactions, pepsin was present but in a very small amount, as only the 1/20 dilution became clear.

Case II. T—e, Sadie, aged 29 years, admitted August 30. The present illness of the patient dates back to 7 months ago, up to which time she has been perfectly well. Symptoms, in order of appearance: (1) pain of a dull character in epigastric region; (2) a few days after experiencing pain she began to vomit; vomiting came on right after partaking of food; (3) in the last few weeks the vomitus became dark in color and of a very foul odor; (4) in the last 7 months the patient lost 35 lbs.

Examinations for occult blood in the feces and stomach contents were negative. The urine showed an excess of indican.

Examination of stomach contents, after giving her a test supper on a fasting stomach, showed from 750-900 c.c. stagnated food of a slightly acid reaction. Microscopically there were found a great number of pus cells and unchanged starch granules, no long bacilli, no sarcinæ. After lavage and inflating, the greater curvature was found about 3 fingers under the umbilicus. After Ewald test meals, the following results were obtained: free HCl, none; total acidity 50-52; lactic acid, strongly positive; glycytryptophan tests, once positive and once negative; pepsin 1/50 in both instances.

Clinical Diagnosis. Pyloric obstruction, due to cancer.

It was proposed to perform gastroenterostomy, but patient having felt relief after a systematical washing of her stomach, did not agree upon operation, left the hospital and was lost from observation.

Case III. Ru—ky, Ida, aged 35 years, admitted July 21. Diagnosis. Perforated duodenal ulcer and gastric cancer.

Patient was operated upon for duodenal ulcer at the Beth Israel Hospital by Dr. C. Goodman. A perforation in the first part of the duodenum was found and also an infiltrating carcinoma of anterior and posterior gastric wall. The urine showed on many occasions an excess of indican.

The benzidin test for occult blood in the feces was positive; in the stomach contents negative.

The gastric analysis showed: free HCl, none; total acidity 26-28; lactic acid (Uffelmann) weakly positive; glycytryptophan test, 3 times made, was negative.

Case IV. Mi—il, Dora, aged 53 years, admitted July 2, 1910. Diagnosis. High-seated carcinoma of the rectum.

At operation, performed by Dr. A. A. Berg at the Mount Sinai Hospital, the lower part of sigmoid was also found to be involved by cancerous growth.

The gastric analysis showed: free HCl, 18; total acidity, 38; lactic acid, negative; glycytryptophan test, once made, was negative.

Case V. Ma—er, B., aged 45 years, admitted July, 1910. Complaints on admission: difficulty in swallowing, great loss in weight.

Physical Examination. Negative. Patient stayed at the hospital only 2 days.

The gastric analysis showed: free HCl, 2; total acidity, 50; lactic acid, strongly positive; glycytryptophan test, made once, was negative.

After leaving the hospital, the patient visited me twice at my office. The glycytryptophan test was made twice more and found negative. On one occasion a quantitative test of pepsin was also made. In a 1/100 dilution the contents became clear. A diagnosis of carcinoma of the lesser curvature of the stomach was made. I have seen the patient 6 weeks later with his physician, Dr. Bauerberg, of Yonkers. He was then greatly emaciated and cachectic. He had an enormously enlarged liver (probably metastases), and he was at this time in a dying condition.

The glycytryptophan test was 3 times negative.

Case VI. Hu—z, aged 56 years. Sent to the hospital by Dr. W. from Newark. Complaints on admission: severe pain in the region of the liver; jaundice for several months. Loss in weight.

Physical Examination. Deep general icterus, liver very much enlarged and smooth. Urine, bile stained. Stools, clay-colored. A probable diagnosis of carcinoma of the head of the pancreas was made. Free HCl, slight reaction to Congo; lactic acid, negative; glycytryptophan test, made once, was negative. The patient escaped from observation.



## CASES OBSERVED AT THE MOUNT SINAI DISPENSARY

Case VII. G—n, Roşie, aged 42 years, was first seen July 25, 1910, last time September 1, 1910. Chief complaints: pressure, sometimes pain, in the epigastric region, vomiting after taking food. Anorexia. Lost 30 pounds in weight for the last 2 months. On many occasions her stomach contents were examined at the laboratory by Dr. P. Bernstein. The following are some of his reports: free HCl, 5, 12, 15; total acidity, 12, 18, 45; lactic acid, none.

On three occasions I took the contents home to perform the glycytryptophan test. They were all negative.

The improvement was shown by a nearly normal total acidity in the latter examination. The patient gained in weight under a simple roborant treatment. After she started to complain about symptoms, which pointed rather to a neurosis, I concluded that she always has suffered from a gastric neurosis, although at one time her illness very much simulated gastric cancer.

Case VIII. Zo—lin, aged 60 years, female, first seen August 18, 1910. Was referred from the hospital to the dispensary with the diagnosis of inoperable carcinoma of the stomach. A hard mass in the region of the stomach and distinctly enlarged glands in the left axillary region could be felt.

Dr. Bernstein reported to me on one occasion: free HCl, negative, blood present. This specimen was not used for glycytryptophan test. About a week later, the stomach contents, examined by myself, did not give any reaction for occult blood. Free HCl was negative. Glycytryptophan test, made once, was strongly positive.

Case IX. Lad—i, Morris, aged 37 years. First seen at the Beth Israel Dispensary, March 24, 1910. Free HCl, 50; total acidity, 95. There was stagnation of food on fasting. Microscopically sarcinae in large numbers, yeast cells and fat droplets were distinguished. Occult blood in the contents could not be demonstrated. After adding bromine water to the contents, no reaction for free tryptophan was obtained. Glycytryptophan test showed twice a strong reaction.

Notwithstanding the positive reaction, a diagnosis of benign pyloric stenosis, probably due to an old pyloric ulcer, was made. On March 31st, gastroenterostomy was performed by Dr. L. Ladinski

at the Beth Israel Hospital and the thickened pylorus was tied. Patient gained forty pounds in six weeks after operation and is now perfectly well.

After this improvement, no doubt can be had that I was dealing with a benign stenosis, and to this also pointed the presence of sarcinæ in a very acid stomach.

#### PATIENTS FROM PRIVATE PRACTICE

Case X. OI—i, aged 53 years, music teacher. Six years ago the patient was treated by me for acute toxic gastritis. Since that time up to the end of June, 1910, he felt perfectly well. Then he began to vomit and to lose in weight. The physical examination was entirely negative.

After a preliminary test supper on fasting, from 100-150 c.c. of contents of acid reaction were obtained. Examination of the stomach contents on many occasions showed: free HCl, none; total acidity, 40, 50, 55; lactic acid, every time strongly positive; glycytryptophan test, twice negative, once positive; pepsin, 1/100; microscopically: bacilli, yeast cells, fat globules and starch granules.

A diagnosis of pyloric obstruction due to cancer was made. On August 10, 1910, pyloroplasty was done by Dr. A. A. Berg at the Mount Sinai Hospital. The patient died a few days later. The glycytryptophan test was once positive and twice negative.

Case XI. S—no, Hanna, aged 70 years, referred to me by Dr. B., May 17, 1910. For the last few months anorexia, vomiting, loss in weight, great weakness were present. Stomach contents: free HCl, none; total acidity, 35; lactic acid, strongly positive. No stagnation of food on fasting, no microscopical stagnation of food, but a large number of bacilli in every field of vision.

A diagnosis of gastric cancer probably in one of the walls was made. Glycytryptophan test negative. Pepsin was not found, as a dilution of 1/20 did not clear up. Patient died one week later.

Case XII. Sm—t, Clara, aged 47 years, referred to me by Dr. Z., May 16, 1910. Patient has had severe uterine hemorrhages for a few months after menstruation had ceased for about two years. Lost 15 pounds in weight during the last four months. Was told by a gynecologist that she had cancer of the uterus. Hemorrhages from

the uterus ceased and dyspeptic symptoms appeared; vomiting once or twice during the day, at times every second day. Appetite entirely gone. A mass could not be palpated.

Examination of contents on many occasions revealed absence of free HCl; total acidity from 30-40 and 45; lactic acid negative; pepsin, 1/100. On fasting, from 50-100 c.c. containing food remains were obtained. Microscopically: no bacilli, starch granules, fat globules and yeast cells, and a large number of pus cells were seen. Glycyltryptophan tests were twice positive. A diagnosis of pyloric obstruction due to cancer was made. The patient did not agree to operation and escaped from observation. In October I heard from a relative of hers that she was in a dying condition.

Case XIII. Ula—y, Rivke, aged 60 years, first seen at my office, August 24, 1910. Has been sick 1½ years. Weight before illness, 240 pounds; half a year ago her weight was 120 pounds. Lost appetite. Vomited from 3-4 hours after meals for the last six months. On fasting, gastric contents showed visible stagnation of food. Microscopically: long bacilli, whole starch granules and fat globules were seen. Free HCl, negative; total acidity, 10 and 12; lactic acid, none; pepsin, none; glycyltryptophan test was once positive, once negative.

Case XIV. P—er, aged 28 years, female. Diagnosis. Achylia gastrica and gastrogenous diarrhea.

Gastric analysis on many occasions showed: free HCl, none; total acidity, 10. Nearly every time the contents looked somewhat greenish. Bromine water and chlorine water gave a beautiful rose-violet color. Ten c.c. of filtered stomach contents were placed into a test tube and some toluol added. This test tube was put with the bottle containing glycyltryptophan and 10 c.c. gastric juice for 24 hours in the thermostat at a temperature of 38 deg. C. After 24 hours both specimens showed, after acidifying with 3 per cent. acetic acid and adding bromine vapor, the same rose-violet color. In the glycyltryptophan specimen the color was not more pronounced than in the specimen without it. Glycyltryptophan test, therefore, was considered as negative.

Case XV. Goo—d, Daniel, aged 29 years, was first seen March 27, 1910. Chief complaints: fulness and drowsiness after meals. Occipital headaches.

Physical examination. Splashing sound in the stomach after drinking half a glass of water. No splashing sounds on fasting.

Examination of stomach contents. No stagnation of food on fasting, but some stagnation after a Leube's test meal; free HCl, 12-16; total acidity, 38-42. Greater curvature after inflating, 2 fingers under the umbilicus.

Diagnosis: gastropotosis and gastric insufficiency first degree (Boas).

Bromine water test negative. Glycyltryptophan test, made once, was negative.

Case XVI. Fo—x, Max, aged 38 years, was first seen August 15, 1910.

Diagnosis: achylia gastrica and gastrogenous diarrhea. Loose bowels for last 3 years, 4-6 movements daily. Belching with sour taste in the mouth. Was treated with alkalies. Many examinations of contents of stomach made, showed: free HCl, none; total acidity, from 8-10; bromine test negative; glycyltryptophan test negative.

Case XVII. H—g, Morris, aged 35 years, sent by Dr. R. Attacks of cramp-like pains in the abdomen for years. On 3 occasions had tarry stools. Physical examination showed great tenderness to the right of the umbilicus. Examination of stomach contents showed: free HCl, none; total acidity, 10; test for occult blood positive in the stools, negative in gastric contents.

A tentative diagnosis of duodenal ulcer was made. Bromine test was positive for tryptophan. The same procedure was performed, as was in Case XIV. The glycyltryptophan test did not make the reaction more pronounced. Therefore, the glycyltryptophan test could be considered as negative.

Case XVIII. G—g, H., aged 46 years, was first seen May 30, 1910. Diagnosis: chronic alcoholic gastritis and hypoacidity. Glycyltryptophan test, made once, was negative.

Case XIX. P—us, H., aged 34 years. Diagnosis: chronic asthenic catarrh of stomach. Strings of mucus. Examination of stomach contents showed: free HCl, none; total acidity, 14; glycyltryptophan test, once made, negative.

Case XX. N—berg, Annie, aged 38 years. Diagnosis: chronic asthenic catarrh of stomach. Enormous amount of visible mucus.

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Free HCl, slightly positive; glycytryptophan test, made once, negative.

Case XXI. Wo—m, Cilia, aged 36 years. Diagnosis: diabetes and achylia gastrica. Glycytryptophan test, made once, negative.

In making a résumé of all my cases, it can be seen that, with the exception of one case of rectal cancer and one of pancreatic cancer, there were 11 cases of gastric cancer. Of these 11 the glycytryptophan test was negative in four; in the remaining cases the test was twice positive in case 12, once positive (only one test made) in case 8, while the remaining 5 gave now positive and now negative reactions.

Pepsin was found, though only in small quantities, in cases I, II, X, and XII.

In 4 cases with positive glycytryptophan tests, pepsin was present.

Pepsin was absent in Case XI with a negative glycytryptophan test, and absent also in Case XIII with one positive and one negative reaction.

Although the material is too small to draw definite conclusions from, yet it can be seen that in most of the cases with positive glycytryptophan tests pepsin was found to be present, and, therefore, the peptid-splitting ferment does not seem to destroy this gastric enzyme.

In all non-cancerous cases the test has been negative, with the exception of the above mentioned case of benign pyloric obstruction. If it is to be assumed that the presence of a ferment in the contents of the stomach of patients with gastric cancer, produces the cleavage of the glycytryptophan, then the question arises how it happened that glycytryptophan was decomposed into free tryptophan in a non-cancerous stomach. Tryptophan could hardly have been regurgitated into the stomach from the duodenum, as there was a pyloric obstruction, and finally the preliminary bromine test would have resulted accordingly. The contents showed a total acidity of 95. In such acid contents, according to Neubauer and Fischer, the peptid-splitting ferment could not be present. Therefore, it can only be assumed that cleavage of glycytryptophan could probably have been done by the sarcinæ or yeast cells, or both. Maybe the latter can do the same work as bacteria which can decompose glycytryptophan

into tryptophan after standing for 24 hours in the incubator, when toluol has not been added.

A short survey of the literature will show that the occurrence of tryptophan in the stomach may depend upon bacterial and fermentative decomposition processes. Boas<sup>11</sup> points out that leucin and tyrosin occur in the gastric contents. He says: "Leucin-like structures may be present in the stomach contents not only in the fasting stomach, but also after ingestion of food. I have noticed this especially where pyloric stenosis, with consequent ectasia and fermentative and putrefactive processes exist in the stomach, and in one case I have isolated the leucin. Tyrosin, too, can be isolated in the stomach after the method of Hebrizetz and Habermann. Further experience must explain the diagnostic significance of this anomaly which, in my opinion, is a remarkable one."

Tryptophan, too, has been found in the gastric contents of carcinoma patients after test breakfast and especially after more solid meals long before the introduction of the glycytryptophan test. This observation, which recently has been published as new, was first made by Erdmann and Winternitz,<sup>12</sup> who wrote as follows: "In carcinoma of the stomach, even if there was no stagnation of the gastric contents, we have found tryptophan present in the majority of cases after a test breakfast, and more particularly after a test meal. The reaction is especially intense in the presence of pyloric stenosis caused by carcinoma. In incipient carcinoma the reaction fails."

These authors, as well as Glaessner<sup>13</sup> also found the tryptophan reaction positive in benign stenosis of the pylorus with extensive stagnation. Neubauer and Fischer, in their elaborate communication did not fail to quote Erdmann, Winternitz and Glaessner in this connection.

It may be concluded that even though the glycytryptophan test was positive in many of my cases of gastric cancer, it cannot be looked upon as a reaction pathognomonic of the disease.

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## THE DIAGNOSIS OF FIBRILLATION OF THE AURICLE

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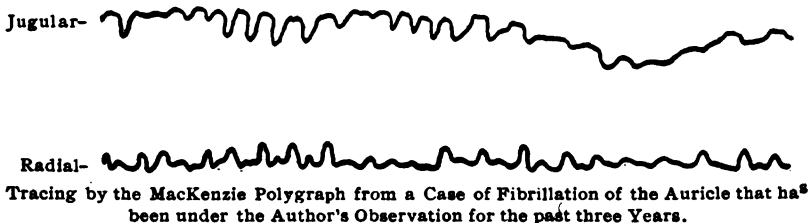
A large number of workers have had their attention directed, during the last few years, to the study of the irregularity of the heart. The natural question arises: What is the most frequent form of irregularity in serious heart cases, and when may it be suspected?

A startling recent conclusion is that the most frequent condition leading to irregularity of the pulse in serious heart cases, such as are found in hospital wards, is fibrillation of the auricle. It is stated by Thomas Lewis, Arthur R. Cushny and others, that over one-half of such cases are suffering from fibrillation of the auricle.

Fibrillation of the auricle consists of a temporary or permanent delirium of the musculature of the auricle whereby the fibers of the auricle contract in a vermicular and entirely incoordinate manner. The result is that while there is no satisfactory action of the auricle in propelling the blood, still there originate from the auricle a great many impulses that travel toward the ventricle. Of course, it is presumed that the reader is familiar with the fact, that in a healthy heart the impulses to contract originate in the auricle and travel

through the bundle of His to the ventricle, and that the auricle establishes the rhythm of the heart. It must also be remembered that the ventricle is unable to respond to impulses to contract until it has recovered from the previous contraction. Thus it becomes clear that when a great number of impulses are received from the auricle, the ventricle will only respond to such as reach it at a time when it has recovered from a previous contraction. Thus, there is a limit to the rapidity of the ventricle, and it is easy to show that such a shower of impulses to contract would naturally lead to great irregularity.

The pulse in cases of fibrillation of the auricle is absolutely irregular. The beats are not alike in size and they come at all kinds of intervals. This kind of a pulse alone in a serious heart case is



enough to lead us to suspect fibrillation of the auricle. So when the pulse shows hardly two beats of the same character and length succeeding each other, or when in a pulse-tracing no two parts of the tracing have even a superficial resemblance, it is almost certainly a case of fibrillation.

When the venous pulse shows a total absence of the usual form, and instead of any wave representing definitely the contraction of the auricle being discoverable, the only definite waves correspond to contractions of the ventricle, this is strong confirmatory evidence.

I have often been able, by feeling the radial pulse and watching the pulsation of the veins in the neck, to satisfy myself that the radial and venous pulse were acting in this way. In the same way when one has once learned to observe the venous pulsation above the clavicle, he can often, in feeling the pulse and watching the vein, realize the auricular wave.

Definite proof of auricular fibrillation is discovered in the tracing of the electrocardiograph which shows many fine waves. These



cases are most interesting, and, since we now understand them, are satisfactory patients to treat.

The point of this communication is rather to call more general attention to auricular fibrillation than to enter into the details. The condition can be diagnosed with as much certainty without apparatus, as can many other clinical conditions, but tracings afford the complete proof.

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## THE DIAGNOSIS OF THE EXTRA-GENITAL CHANCRE

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As early as the end of the great syphilis epidemic at the close of the fifteenth century the possibility of the non-sexual transmission of the disease was recognized by many observers, and many instances of the kind are recorded by the syphilographers of the succeeding century. Extra-genital infections were neglected, however, by the writers of the succeeding years; though a passage in Goethe's *Wilhelm Meister's Lehrjahre*, in which a young girl is described as not only avoiding cups and glasses that have been used by young men, but even as fearing to sit down on the chairs that they have occupied, shows that the dangerous possibilities of transmission of the disease in unusual ways was generally recognized. It was only in the last half of the nineteenth century, however, that these cases were subjected to serious study; Sigmund, Ausspitz, Mraček, Bulkley, and Fournier collected long series of cases, so that Scheuer (*Die Syphilis der Unschuldigen*, Urban & Schwartzberg, 1910), in the latest authoritative pronouncement on the subject, could base his conclusions on not less than 25,000 recorded cases.

So large a material enables us to form some idea as to the local-

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Fig. 1. Chancre of lower Lip. Fig. 2. Chancre of Lip of the ordinary type. Fig. 3. Hypertrophic Chancre of Lip simulating Epithelioma. Fig. 4. Edematous Sclerosis of Lip, simulating simple Infection and Cellulitis; Adenopathy

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ization of the extra-genital lesion. In over 6,000 cases, one-quarter of the whole number, it was upon the lips; a fact not to be wondered at when we remember the vulnerable structure of the mucosa of these organs and their liability to inoculation from kissing, mediate contagion through utensils, etc. These modes of transmission are so common that I entirely believe that it is in only a very small minority of them that any suspicion of unnatural sexual practices need be entertained. In some 1,600 cases the chancre was in the interior of the mouth; and when we add thereto 1,600 tonsillar chancres, 700 scleroses of the pharynx and internal nasal passages, 500 of the tongue, and 150 of the gums, it is evident that in some 4,500 cases at least inoculation took place inside the mouth. For the rest of the face there were over 1,000 cases of chancre of the eyelids and conjunctivæ, 400 of the chin, 350 of the cheeks, 300 of the nose, 100 of the forehead and temples, and 80 of the ears and scalp. For the hands and fingers the figure is 1,400; for the skin of the trunk 300; for the lower extremities 250; upper extremities 150. Chancres of the breast and nipple numbered nearly 3,000; this large number being accounted for by the frequency of the infection of wet-nurses by diseased infants. Anal chancres numbered about 300; a comparatively small figure in the light of my own experience (I have seen three anal chancre cases shown at one medical society meeting), but probably accounted for by the special reasons for secretiveness in lesions of this location. To vaccination is credited 4,000 infections, mostly dating from the older days when arm to arm inoculation was practised. About 1,500 chancres were due to circumcision, 250 to cupping, and 200 to tattooing.

Difficulties that are practically insuperable stand in the way of any attempt to form any judgment as to the relative frequency of the extra-genital as compared with the genital syphilitic infection. Comparatively speaking, of course, the latter is rare; and neither individual experience nor the records of institutions cover the field with sufficient completeness to give us assurance of even approximate accuracy. Further, the fact that the lesion may appear anywhere on the surface of the body, as well as in any of the cavities accessible from the outside leads, in the face of the present and ever increasing subdivision and specialization of the medical field, to so wide a distribution of the material that comparative investigation is almost

impossible. Thus the laryngologist will see more initial lesions of the lips, tongue, and mouth; the gynecologist more examples on the labia and cervix, the general surgeon more chancres of the fingers, than the syphilographer himself; while in the experience of the latter the genital chancre will have an overwhelming preponderance. Personally I have chanced to see a very considerable proportion of extra-genital cases; possibly because in the course of years I have seen so many instances of digital infections in colleagues. My office records examined some years ago showed 5 per cent. of extra-genital infections; but this figure is undoubtedly too high. The authorities in most cases avoid expressing themselves at all on this point; but I think it would be safe and conservative to place the extra-genital as compared with the genital scleroses at a ratio of 2 per cent.

If the diagnosis of the genital chancre is often a matter of difficulty on account of the manifold form that it may assume, this is much more the case with the extra-genital lesion, seated as it often is in the body cavities, where it is almost invariably accompanied by secondary infections that alter its appearance; where it often closely resembles other lesions; and where the observer but too often does not even think of the possibility of its occurrence. With a lesion of the genitals, especially if exulcerated, our first thought is of syphilis; and so also is the patient's, more especially as fear or a guilty conscience but too often leads him to anticipate the worst. As a matter of fact the mistake with the genital lesion is usually of the opposite direction, and innocent herpes, furuncles, small infections, and erosions are diagnosed as initial lesions. But when the often insignificant and painless initial lesions appear on the fingers, lips, tonsils, etc., we are prone to think of everything rather than lues; and it is too often that only the advent of marked general symptoms leads us to a correct diagnosis, if we make it at all. There is not the least doubt that many of the so-called cases of syphilis d'emblée, syphilis without a chancre, and many of the still more frequent cases in which truthful patients deny ever having had a chancre at all, are instances where the initial lesion has been seated on some part of the body distant from the genital organs, or on the mucosa, and has been either not diagnosed or not noticed at all. Two comparatively recent cases demonstrate strikingly how such mistakes can occur even in competent hands. A patient who came to me on account of



Fig. 5. Two initial Lesions of upper and one of lower Lip, of slightly varying age. Fig 6 Quad-  
 ruple Chancres of Lips, with fifth initial Lesion on Skin of lower Lip; Bilateral Adenopathy.  
 Fig. 7. Chancre of Tongue; Patient a Cigar-maker, finishing Tips with her Tongue.  
 Fig. 8. Chancre of Groin

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a skin eruption that had appeared within a day or two had had his left tonsil ablated a month before by a well-known Philadelphia laryngologist, the diagnosis being simple hyperplasia of that organ. He had a roseola, general adenopathy, fever, and an enormous hard submaxillary gland on the side that had been operated on; and the base of the ablation wound still showed the typical chancrous induration. The other case was that of a physician who had been under the care of a very competent surgeon of this city for several weeks for an infection of the right fore-finger; the panaritium had progressed in spite of the most careful local treatment, and amputation at the first phalangeal joint was now recommended. This patient also had unmistakable evidences of secondary lues, and his infection healed promptly under the usual treatment.

Now, although in view of its varying physical appearance and the disturbing influence thereon of accidental factors, it is not possible to lay down any hard and fast rules that will enable us to distinguish the initial lesion of syphilis at a glance from an infection, a granuloma, a herpes, an epithelioma, or a gumma, there are certain characteristics of the initial lesion of syphilis that are usually manifested under whatever circumstances it occurs. I lay great stress upon them, since they are evident from the very earliest stages of the lesion, and can be found by any one without the aid of laboratories or instruments of precision. These characteristics are as follows:

1. The Tumor. It should never be forgotten that the effect of the implantation of the syphilitic virus anywhere in the body is the formation of a tumor. Pus formation or ulceration is an accident that may or may not occur, and is due entirely to secondary infection. On the dry surfaces this tumor formation is usually a permanent and marked feature of the lesion; and even where pus infection occurs with abscess formation or ulceration or hypertrophic granulation tissue appears, the base and surrounding tissue of the lesion will show the unmistakable tumor formation. In certain tissues, of course, this tumor formation is especially hard to appreciate, as in the gums, or in the tissues of the cervix uteri; but even here careful examination will usually elicit it. In loose tissues, on the other hand, as in the eyelid, scrotum, or lip, and especially if there is pyogenic in addition to the treponemic infection, a great amount of



edema of the surrounding tissues may complicate the picture and cause it to still more resemble an ordinary infection. Here also, however, careful palpation will reveal the true condition of affairs; in the midst of the edematous mass will be found the characteristic tumor.

2. Hardness. It is almost impossible to describe in words the characteristic "feel" of the initial lesion; it can only be really appreciated by practice. It is very plain to the experienced touch; for the syphilitic infiltration is very dense and very sharply circumscribed. Whether it forms a large mass or only a thin plate, it feels like a foreign body "let into" the skin. And no matter what secondary changes may have occurred, ulceration, edema, hypertrophic growth, etc., the hardness of the base will be appreciable. Under certain circumstances, however, the recognition of this sign is especially difficult. Irritation and cauterization, and more especially the repeated employment of the milder agents for these purposes, such as carbolic acid or silver nitrate, leads to an induration of the base of a suspicious lesion that may be very deceptive. The inflammatory induration, however, is softer, more doughy, and less sharply limited than the specific hardness. Even to the experienced touch, however, the differentiation may be difficult; and this possible obscuration of a diagnostic factor that may be of great importance later on in the course of the lesion is a cogent argument against the indiscriminate cauterization of suspicious lesions that is so much in vogue.

3. Painlessness. I am in the habit of relying very much on this feature of the initial lesion, which, like so many other symptoms, is of very different value when present than when it is merely absent. There is absolutely no pain to the uncomplicated and unirritated chancre, no matter where it is located. Of course when it is infected or when it has been irritated by treatment, or when it is seated at a point where it is unavoidably exposed to "insult," as on the tongue, it will be tender to the touch and even spontaneously painful to some extent. But even under these circumstances both the pain and the tenderness are appreciably different from those of many of the lesions with which the chancre is liable to be confounded. The chancroid, for instance, is an intensely irritable and painful lesion from its very smallest beginnings to the end of its course; the epithe-

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Fig. 9. Chancres of both Nipples; Lesions of slightly different Ages. Fig. 10. Large exulcerated Chancre of Breast. Fig. 11. Chancre of Finger; result of blow on mouth of adversary, cutting knuckle on Teeth. Fig. 12. Unique Case showing: a. Chancre of pubic region; b. Chancroidal Ulceration of sheath of penis; c. General maculo-pustular Syphiloderma; d. Gonorrheal Phimosi and Edema of Penis

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lioma, when exulcerated, is almost as much so; and even in the ordinary pus infections that occur in an excoriation or a herpes, pain is a prominent and characteristic sign.

4. Rate of Growth. The history of their affection as given by patients is not as a general rule very trustworthy or of much importance as a factor in our diagnosis; but it may be employed as a subsidiary aid, and it has increased value if it is based on our own observation rather than on the anamnesis. The rate of growth of the initial lesion is moderately slow; it takes several weeks to reach its full size. This will serve in a general way to differentiate it from such affections as herpes, chancroid, and ordinary pus infections, in which the lesions reach maturity in a few days, on the one hand; and on the other from the various forms of cancer, epithelioma, rodent ulcer, etc., which always take months and may take years to reach the size at which we see them. Of course there are certain lesions in which this factor, even when ascertainable, will not help us. A gumma, for instance, may have a rate of growth very like that of a sclerosis; and so also may a chronic pyogenic granuloma.

5. The Local Adenopathy. I hold this sign to be of less value than is generally supposed; and since it does not appear in its full development until the chancre has been present for some little time, the other characteristic features of the lesion in question are usually sufficient without it. The lymphatic glands to which the vessels of the area affected run become affected with a hard, usually painless, and variably sized swelling. The latter factor especially is dependent on the site of the initial lesion. When this is the finger, for instance, the epitrochlear is only moderately swollen; whilst when it is on the lips the submaxillary may be so enlarged as to form a tumor that is visible from a distance. In the local adenopathy of ordinary pus infections the lymphatic glands are larger and more tender; and the swelling has a distinctly doughy and boggy feeling that is entirely different from the sharply circumscribed hardness of the syphilitic gland. When the chancre is infected and exulcerated, however, the local glands will take on characters that are a combination of both forms of swelling, and differentiation of the tumor by this means will be impossible. In gummatous lesions the swelling is less pronounced, and less hard; and in cancerous affections, on the other hand, it is often very large and quite hard and tender.

6. The Treponema. The demonstration of the presence of the specific organism is of course, in skilled hands, proof conclusive of the nature of the tumor. I have placed this feature last, because in the first place it is not a symptom that can be elicited by everybody, and in the second place, it is not absolutely necessary for a diagnosis. I do so also to register a protest against the tendency so manifest of late years, of relying almost exclusively on laboratory tests for diagnosis, to the exclusion of the ready and practical means for that purpose that are ready at hand, and at everybody's disposal at any time. It requires experience and skill to recognize the spirochete with certainty; and inestimable in value as the test is, especially in doubtful cases, that value is directly dependent on the observer's experience.

Whilst the technic of the spirochete examination has been simplified considerably, so that the ultra-microscope and electric illumination is no longer required, the recognition of the organism and its differentiation from accidental contaminations is sometimes difficult. With the dark stage illuminator we have the advantage of searching for a living, motile organism, characteristic both as to its structure and as to its mode of progression. With the India ink stain, the simplest and now the most commonly employed method of spirochete demonstration, the tenuous organisms are dead, occupy every plane of the stained film, and are liable to be confounded with other spirillæ, connective tissue fibrillæ, and accidental impurities in the India ink itself. The details of the treponema examination, however, are beyond the limits of this present article.

7. Evidences of the Presence of Constitutional Syphilis. I group these under one heading, since they may be manifold, are usually plain, and the question of diagnosis is of most importance and of greatest difficulty before they are present. There ought to be but little doubt, and there is usually none at all, as to the nature of a suspicious or undiagnosed extra-genital lesion, when a spreading lymphangitis, a general adenopathy, an exanthem, a specific angina, etc., has appeared in its course. Nevertheless, such mistakes do occur; and of course it is entirely possible for a patient to develop an urticaria, a scabies, a follicular tonsillitis, an influenza, etc., coincidentally with or soon after the appearance of the first local manifestation of infection with the treponema.

The extra-genital initial lesion is liable to be mistaken for a herpes, a simple pus infection, a cellulitis, a chancroid, a gumma, or an epithelioma; each of these, however, has certain distinguishing features that ought to prevent mistake. These may be scheduled as follows:

A. Simple Infection. Here there is always a local lesion through which infection occurs, though it may be very minute and may thus escape notice. The swelling comes on rapidly; it is tense and doughy, and not sharply defined; there is a good deal of pain, and the local adenopathy is of the large, moderately hard, and tender variety that is always associated with pus infection. Abscess formation or ulceration occurs early, and the entire lesion is frankly inflammatory in character, entirely different from the indolent tumor of the chancre. It often occurs combined with

B. Cellulitis, and then the liability to mistake is greater. We have a local lesion and a consecutive cellulitis; and the edematous swelling of the latter may largely conceal the characters of the specific lesion. This is especially the case in portions of the body where there is much lax connective tissue, as in the lip; and of this the case shown in Fig. 4 was a good example. Two-thirds of the entire lower lip was occupied by the doughy, edematous swelling, so that the entire lesion simulated an ordinary infection; careful palpation, however, showed the presence of a hard, sharply limited infiltration in the center of the mass and directly under the excoriation. The adenopathy was also marked, and shows well in the picture.

C. Herpes. This is very frequent and very disquieting to the syphilophobic; and no single lesion offers a finer field for the advertising blood-poison curer. Yet no lesion is more readily differentiated from the chancre. Herpes is usually multiple; the initial lesion is usually single, though exceptions not infrequently occur, as Figs. 5 and 6 show. Herpes is recurrent, under the influence of slight general infections, etc.; the patient will give a history of often having had similar lesions; the real chancre occurs but once. Herpes is vesicular from the beginning; it is itchy and tender; and it is never indurated, save when it has been cauterized or otherwise irritated; and even in this latter case the induration is inflammatory and diffuse; and, finally, when left alone, a herpetic eruption disappears spontaneously in a few days.

D. Chancroid. This is very rare extra-genitally; it begins immediately after infection as a minute ulceration, and spreads rapidly; it is extremely tender and painful; it is entirely lacking in the characteristic induration, though interference may give it an inflammatory hardness; the adenitis accompanying it is painful, tense, and distinctly inflammatory; and finally, the Unna-Ducrey bacillus is demonstrable. All of these are characteristic points that will serve to differentiate the lesion from that of primary syphilis.

One proviso must be made, and must always be borne in mind and usually fully explained to the patient in regard to all the four classes of lesions above discussed. They all appear rapidly after implantation of the noxa, whilst the virus of syphilis has a period of incubation that varies from four to eight weeks. There is no inherent reason why two viruses should not be implanted at one and the same time at the same spot; and when that occurs the lesion of the simple infection, the cellulitis, the herpes or the chancroid will develop at once, whilst that of the syphilis will appear only later. Thus the former lesions may have been present a long time, or even have healed and been forgotten, before the specific induration appears. We can never say positively, therefore, that a given lesion may not later develop into the first sign of the more serious infection. Double infection, however, is rare; and we are fully justified in relieving our patient's mind and making the less serious diagnosis when the evidence present at the time justifies it.

E. Gumma. A single gummatous lesion may look, even to the experienced eye, very much like a chancre. It is less hard, however, and more distinctly inflammatory; and it is especially prone to soften in the center and break down like an abscess than the chancre ever is. The local adenopathy is comparatively slight, and not characteristically hard. Other evidences of past syphilis will be present on the body; the spirochete examination will probably be negative, since these organisms are but rarely and with difficulty demonstrable in gummata; and the Wassermann serum test will be positive, which will not be the case with the chancre. Finally, the history, a frail support in most cases, will be of value here; since most patients know very well that they have had syphilis if such be the case.

F. Epithelioma. Cancer of the skin occurs in advanced age; chancre is usually an affection of the young. Its growth is ex-

tremely slow, taking months and years where the initial lesion takes but days and weeks. It is usually very painful, though there are exceptions to this rule, especially when the lesion is not seated near the mucous orifices of the body. The characteristic epithelial accumulations of skin cancer, showing itself as the hard pearly margin with arborescent vessels running over it will be entirely absent in chancre. On the other hand, in the latter case the treponema will be present to decide the diagnosis in doubtful instances.

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## THE CAUSATION OF HIGH BLOOD PRESSURE IN CASES OF AUTOINTOXICATION

By HOUSTON B. HIATT

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In all enterogenous conditions with fermentation and putrefaction resulting in autointoxication that have come under my care I have been struck with the fact that there is in a large percentage of these cases high arterial tension. Among the earlier of cases I was very much concerned in looking for atheromatous arteries, a chronic nephritis or some other well-known condition that is accompanied with or preceded by a hypertension. But failing in my efforts to locate a definite cause of this hypertension, I began to note the effect upon the increased tension of appropriate treatment of the intestinal condition. My results have been such as to force me to the conclusion that we have in the cases of intestinal putrefaction a primary arterial tension that is due solely to the formation and absorption of toxins resulting from the imperfect digestive changes. The *modus operandi* I have not been able to find discussed anywhere in the current literature dealing with intestinal conditions.

High arterial tension appears early enough in a number of conditions to attain the dignity of an etiological factor. Many eminent writers place it in the class of causes of chronic interstitial nephritis, though I hardly think that, with a blood stream free from toxic products of the intestines, we would get marked kidney changes from the high tension alone, unless there existed grave vessel



changes. It is, in all probability, in these cases the combination of the toxins and the high pressure (probably due to the toxins) that works the harm. Be that as it may, we do know that there is an element of danger to the heart and the vessels in a continued high tension. The heart is called upon to do more work and the vessels are under a greater strain. The immediate result is hypertrophy of the heart with an atheromatous condition of the coronary arteries and secondary degenerative changes in the systemic blood vessels. The ultimate result is dilatation of the heart and rupture or aneurism of the vessels. The elastic distensibility of the arteries decreases with increased blood pressure, and this elasticity being lost soon results in a condition of general dilatation of the arterial system. Rosenbach goes so far as to class all arteriosclerotic changes in the arteries (as opposed to the arterioles) as secondary to hypertension. Janeway says: "The diminished power of the elastic distension of the arteries and the sharp rise in blood pressure that occurs at every systole introduces the danger of rupture." This assertion is justified by experience, it is seen illustrated in the deaths due to rupture in the course of Bright's disease. This argument could be extended for pages to show that a continued high pressure is a cause of alarm, and that it really constitutes an element of danger to the individual, except in those cases of a complementary high pressure where sudden lowering would endanger life; but we are all familiar with the many conditions in which we find a high tension, and I venture the assertion that in the larger number of these conditions the hypertension was primary.

In the normal individual the mean arterial tension runs about 100 to 120 mm.Hg. The highest I have ever seen being 230 mm. in a case of chronic kidney trouble and the lowest 80 mm., although there are extremes greater than these on record.

To intelligently consider the blood pressure, it is necessary that we take into account the factors controlling and essential to it. There are four of these factors: (1) force of heart beat; (2) the peripheral resistance; (3) elasticity of the arteries; (4) the volume of the circulating blood. The last two of these we can for the time dispense with and will now turn to the first two. The force of the heart beat is in the first place necessary to overcome the aortic pressure. It is not necessary here to consider the physiology of the heart beat, suffice

it to say there is a nervous control and I will show later that this is both sympathetic and central. A condition we frequently encounter in autointoxication is increased frequency in the heart beat. I will offer my views as to its mode of causation later, I mention it here to state that ordinarily a faster beat per se does not of necessity mean an increased pressure, and therefore there must be some other factor essential for an increased beat to raise pressure, and this is an increased peripheral resistance. And when we find the two associated we find a marked rise in pressure. The greater the peripheral resistance the greater must be the exertion of the heart to overcome this resistance; this will require a more forceful contraction each time, in addition to a greater number of contractions in a given time, and naturally we find a greater pressure than would result from any one of the conditions existing alone. However, an increase in the resistance invariably means an increase in pressure, and vice-versa. A small part of the normal pressure existing in the arteries is caused by friction and the fact that the vessels are continually branching and growing smaller. This is only an adjunct, however, the really effectual cause is the tone of blood vessels—the state of partial contraction that is ever present in their unstriated muscular fibers during health. This normal tone of the blood vessels depends upon the balance between the vasoconstrictor and the vasodilator nerves. These nerves are derived from the sympathetic nervous system and their existence and course for every organ in the body (with the exception of the brain) has been definitely established. The sympathetic nervous system consists of (1) a series of ganglia, connected by intervening cords and extending from the skull to the coccyx; (2) three great gangliated plexuses situated in front of the spine in the thoracic, abdominal, and pelvic cavities; (3) of smaller ganglia situated in relation with the abdominal viscera and the heart; (4) numerous nerve fibers of two kinds—communicating and distributory. The communicating nerve fibers connect with other ganglia and with the central nervous system; the distributory supply the internal viscera and the middle coat of the blood vessels. Gaskill has shown that in the middle coats of the blood vessels there are small sympathetic ganglia formed by the endings of the sympathetic nerves. Of the three great plexuses the one in which we are most interested in this present discussion is the abdominal or solar plexus. One of the

larger branches of this plexus is the celiac plexus and this is divided, among others, into the hepatic plexus; the hepatic plexus receives branches from the left pneumogastric and the right phrenic nerves, it accompanies the portal vessels and ramifies in the liver substance upon all the branches of the hepatic artery. The portal vessels are thus furnished from the sympathetic, and have a central connection from the branches of the pneumogastric and the phrenic that go to the plexus. In addition to the portal circulation and the liver this plexus also furnishes branches to the following organs (along with their supply from the central system): pancreas, duodenum, mesenteric vessels, gall-bladder and partially to the spleen and stomach. From the foregoing we see that all the blood vessels and organs in the abdomen are surrounded and supplied with sympathetic nerves and that the heart is in intimate connection with these organs through the same nerves and the central nervous system. That all these vessels and organs are under the control of the sympathetic has long been proven, and the connection with the central nervous system has been recently discussed by Starr in the Jour. A. M. A. He reaches the conclusion that, while the control rests in the sympathetic system, the reflex center, for the vasomotor nerves is in the spinal cord, and the impulses reach the cord after being carried to the ganglion by the sympathetic nerve fibers, and the resulting impulses traverse a similar route.

Having established these facts it remains to be shown how these nerve endings in the vessels will be affected by poisons from the intestinal canal. It is probable that there is some effect exerted on the blood pressure before the toxins are absorbed, for it has been shown by Mall, that increase in the intraabdominal pressure results in general increase. That there is an increased blood supply to the abdomen during digestion with its increased concomitant pressure we all know, and we further know that when we apply any irritant to any part of the economy there is an increased blood supply. Now with these two factors in operation there is a double supply of blood and this naturally raises the local pressure. But if these were the only factors then we would note a high pressure in all cases instead of particular instances. It seems that the greater action of these toxins is while they are in the portal circulation before they have reached the liver, for it is in the liver that they are conjugated

and rendered inert so as to be disposed of by the organism. We have found the portal circulation richly supplied with splanchnic nerves accompanying it and ramifying in its walls. We also know these nerves control the caliber of the vessels and other things being equal, the caliber of the vessels control the pressure. It has been shown by the physiologist that when adrenalin or some of the alkaloïds are injected directly into the blood stream there is at once a change of arterial pressure. Bouchard in his epoch-making work has shown that when urine containing these products of imperfect metabolism, even after they had undergone change in the liver, was injected intravenously in the guinea pig it induced a marked rise in pressure. That any irritating substance occurring in the blood stream and coming in contact with the vessel walls will stimulate the splanchnic nerves and cause a change in the caliber of the vessels is fully substantiated by experiments that have been reported from time to time by the physiologists. Just why these products of a perverted digestion being toxic have a selective action on the vasoconstrictor nerves I can't say, but such is the case, as is shown by the arterial hypertension that exists in these cases and which cannot be otherwise accounted for except as a direct result of autointoxication.

To sum up these facts and apply them, we find (1) there are—among others—two factors in the blood pressure, force of the heart beat and size of the vascular canal; (2) that both of these are more or less under the control of the sympathetic system, the latter almost entirely so; (3) these nerves are in intimate connection with the central nervous system and thus with the entire vascular system; (4) all products of the activity of the intestinal canal go through the portal circulation (with the possible exception of fats); (5) the vessels comprising the portal circulation contain in cases where the normal digestive processes have been perverted toxic material in its most concentrated form; and we find (6) that these toxic products are intense irritants and have a stimulating effect upon the vasoconstrictor nerves. In considering these factors the conclusion forces itself that the rise in blood pressure in cases of autointoxication is caused primarily by the action of these poisons upon the smaller ganglionic endings of the splanchnic nerves in the vessel walls, and these poisons have a selective action for the vasoconstrictor nerves. The first effect of this action is a rise in the blood pressure of the

portal vessels. The connection of the nerves supplying these vessels is such that there is a general reaction. An efferent impulse is sent out to the entire vascular system from the reflex centers located in the spinal cord. This will result in acceleration of the heart beat, both through the sympathetic ganglia and the accelerator nerves of the heart. Another factor in the faster beat is local, and is dependent upon primary irritation of the heart. Thus we have a faster beat and, as has just been shown, we have an increased peripheral resistance; these two factors will raise the pressure to an extent that will require a more forceful beat to overcome it. This more forceful beat in the presence of the conditions mentioned will cause a rise in pressure and thus we have a vicious circle established.

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### EXOPHTHALMOS, A COMMON SYMPTOM OF CHRONIC BRIGHT'S DISEASE

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My object in presenting this preliminary and brief communication is to direct the attention, particularly of the general practitioner, to the common occurrence of exophthalmos and the associated external ocular signs in chronic nephritis, and to emphasize the importance of these signs from a diagnostic standpoint.

We are all more or less familiar with the ocular manifestations of chronic Bright's disease discoverable by ophthalmoscopy, such as retinal hemorrhages, albuminuric retinitis, arteriosclerotic changes in the vessels of the retinae, neuroretinitis, etc., but I feel reasonably sure that exophthalmos, a very common objective symptom of nephritis, has been entirely overlooked because we have not been cognizant of its association with Bright's disease. This has been entirely due to the absence of any reference to this sign in our standard text-books or systems of medicine, or in special treatises on the subject of nephritis. So far as I have been able to ascertain from a careful search of the literature, the only article which has appeared

THE ARCHIVES OF DIAGNOSIS



Chronic Nephritis; Left Ventricular Hypertrophy; Marked Accentuation of the Aortic Second Sound;  
Marked Exophthalmos with the Associated External Ocular Signs. Average Systolic Pressure  
220 mm.hg., Average Diastolic Pressure 140 mm.hg.

EXOPHTHALMOS, A COMMON SYMPTOM OF CHRONIC BRIGHT'S DISEASE

Hermon C. Gordinier

[illegible]

on this subject is the one by Barker and Hanes of the Johns Hopkins Medical School, read before the Association of American Physicians in Washington in May, 1909. They state that "among the total admissions of thirty-three cases of chronic nephritis during the first four months of 1909, sixteen (or 48.4 per cent.) showed exophthalmos. The exophthalmos varied greatly in degree, as did the gravity of the nephritic processes in the various individuals. Indeed it may be stated that these cases presenting evidences of serious intoxication (suburemic and uremic symptoms) most frequently showed exophthalmos and one or more of the allied ocular signs—*anisocoria*, *von Graefe's*, *Moebius* or *Stellwag's* sign. Exophthalmos has been an obvious sign in all of the cases of chronic nephritis which have died in the Johns Hopkins Hospital since 1909—seven in number. We have also observed that the cases of chronic nephritis showing albuminuric retinitis during this period have invariably shown exophthalmos. In this series of sixteen cases *von Graefe's* sign was positive in eleven, *Stellwag's* was positive in thirteen, and *Moebius's* sign was observed in eight cases. The pupils were unequal in five cases, and albuminuric retinitis was observed in eight cases. In twelve out of the sixteen cases exophthalmos was associated with arterial hypertension, and in two cases a maximum degree of exophthalmos was associated with the maximum degree of arterial tension and, as the blood pressure fell, the eyes became less prominent."

My observations entirely corroborate those of Barker and Hanes. I have had during the past year the opportunity of studying twenty-eight cases of chronic nephritis—two of the chronic parenchymatous type and twenty-six of the chronic interstitial form. Of this number fourteen presented exophthalmos of varying degrees, together with one or more of the associated ocular manifestations. The two cases of large white kidneys presented a marked degree of exophthalmos. They were observed late in the disease suffering with marked renal and cardiac insufficiency and uremia.

The cases of the chronic interstitial type of nephritis—twenty-six in number—all presented hypertension, left-sided, and occasionally right-sided cardiac enlargement, with accentuation of the aortic and occasionally of the pulmonic second sounds and the urinary findings that exist in this type of disease. Of this number twelve pre-



sented exophthalmos, von Graefe's and Stellwag's sign, and seven the sign of Moebius. In three cases the pupils were irregular. In five cases the exophthalmos seemed more marked on one or other side. In two of the cases the enlargement was greater on the left side, and in three on the right. In none of the cases that have come under my observation was the thyroid gland visible or palpable. The exophthalmos, although most marked in the advanced cases suffering from serious toxemic manifestations, was distinctly visible in those of a less advanced type with fairly compensated hearts and without distinct uremic manifestations. In five of the twelve cases with exophthalmos albuminuric retinitis was present, and in six cases arteriosclerotic changes in the vessels of the retinae with hemorrhages were observed. In none of the cases was tachycardia a prominent symptom.

The most probable explanation of the exophthalmos and associated ocular signs in chronic nephritis (von Graefe, Stellwag and Moebius) is an irritation of the cervical sympathetic system of fibers by toxins floating in the blood stream the result of a chronic renal insufficiency. We know both by clinical and experimental observations that paralytic lesions of the oblongata and cervical part of the spinal cord and section of the cervical sympathetic fibers produce exophthalmos, narrowing of the palpebral fissure and contracted pupils; and we also know from the early observations of Claude Bernard that when the cervical sympathetic fibers are stimulated the converse occurs, namely, widening of the palpebral fissure, exophthalmos, and dilatation of the pupil. Aran and Kaufmann demonstrated in 1860 that this exophthalmos resulted from stimulation of Müller's non-striated muscle in the eyelids, which experiments have been more recently confirmed by Macallum and Cornell (1904). The course taken by the fibers of Müller's orbital muscle and their action has been recently described by Landstrom. He finds that these fibers of smooth muscle form a narrow cuff encircling the anterior portion of the orbit. The fibers of the posterior portion of the cuff pass backward and are inserted into the sclerotic coat of the eyeball, while the fibers of the anterior margin of the cuff are inserted into the upper or lower lids, running obliquely toward the palpebral slit. The middle portion of the cuff constitutes the fixed point from which the muscle acts and is attached by short fibrous

bands to the bony wall of the orbit. Hence when the muscle contracts it tends to draw the eye forward, producing exophthalmos; to separate the lids, creating Stellwag's sign, and to cause the axes of the eyes to diverge, with the production of the sign of Moebius.

In conclusion I would state that we have in exophthalmos and its associated external ocular signs valuable objective symptoms that should make us keen to the presence of chronic nephritis, particularly if unaccompanied by thyroïdal enlargement or marked tachycardia. And while exophthalmos accompanies Graves' disease, paralysis agitans, retrobulbar growths, brain tumor, sinus-thrombosis, or hydrocephalus, its presence should always lead us to carefully consider in our differential diagnosis chronic nephritis.

### **General Retrospects**

#### **DIAGNOSTIC AND PROGNOSTIC VALUE OF VARIATIONS IN BLOOD PRESSURE IN SOME OF THE DISEASES OF THE HEART, ARTERIES AND KIDNEYS**

(A REVIEW OF THE LITERATURE OF THE LAST THREE YEARS)

BY LOUIS BERTRAM SACHS

NEW YORK

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The importance of variations in the blood pressure is generally recognized by the profession. Only those who have had little experience with the sphygmomanometer are at all doubtful as to the diagnostic and prognostic significance of a rise or fall in the arterial tension. Increased blood pressure is truly a foreword of a variety of pathological conditions which may develop in the human economy. The ever-increasing importance of this subject cannot be minimized.

A difference of opinion exists as to some of the factors which are concerned in the production of blood pressure. All agree that the energy of the heart originates the blood pressure. An increase in the output of the heart will only result in a rise in blood pressure when the size of the arterioles remains the same. In the first stage of increased blood pressure there need be no structural change in the vessel wall, providing that the caliber of the arterioles be decreased by the contraction of the muscle coat of the vessel wall under the influence of some toxic agent in the circulation. The peripheral resistance as a factor in the production of arterial pressure is provided by the muscular coat of the small arteries. The elasticity of the vessel wall equalizes the pressure in the systole and diastole of the heart. With loss of this elasticity, violent fluctuations in the blood pressure ensues. Most observers agree that the volume of the circulating blood has within wide limits only a very subordinate influence on the mean blood pressure. There exists a difference of opinion as to the importance of the thickness of the arterial wall and the proportion it bears to the lumen of the artery in the production of blood pressure. *Russel* states that the foregoing factor is one of the chief causes of arterial hypertonus; but *Gibson* has shown that the local arterial resistance of large arteries is of much less importance than the peripheral resistance by tests made immediately after death in which a maximal resistance of only 35 mm.Hg. was obtained.

*Zahl* has shown that the blood pressure even in the healthy fluctuates within a wide range from apparently very slight causes. The possibility of these fluctuations must be borne in mind or a mistake in the interpretation of the sphygmographic readings may be made. It is advisable to take a large number of readings on the

same individual under similar conditions. The following blood pressure values have been obtained for the normal male adult. At the ages of 15 to 30 years the average blood pressure is 122 mm.Hg.; an average high reading is 141 mm.Hg., and an average low reading is 103 mm.Hg. At the ages of 30 to 40 years the average is 127 mm.Hg.; the average high is 143 mm.Hg., and the average low is 107 mm.Hg. At the ages of 50 to 60 years the average is 132 mm.Hg.; the average high is 149 mm.Hg., and the average low is 115 mm.Hg. For the female adult the sphygmographic readings are slightly lower.

All the satisfactory methods of estimating the blood pressure depend upon the same general principle, namely the circulation. *Eckenstein* states that Pachon's sphygmooscillometer has great advantages over the older blood measure instruments. One advantage is the absence of the personal equation. Those who have worked with instruments of the Riva-Rocci type must have been struck with the difficulty that is sometimes experienced in determining the exact moment at which the registering finger can no longer distinguish the pulse. With the oscillometer there is no such difficulty as the disappearance or reappearance of the pulse is indicated by the needle. There are a variety of other satisfactory sphygmographs on the market.

A number of clinicians are of the opinion that increased blood pressure is compensatory, while others believe that when symptoms are caused by the increased blood pressure it is advisable to reduce the pressure. Diseases of the heart, blood vessels and kidney go hand in hand, and serious disease of the one is not found without some involvement of the others. Increased arterial tension in diseases of the heart, arteries and kidneys is directly accountable for a number of symptoms, chiefly among which are nose bleed, increased urination in a beginning Bright's disease, headache, and attacks of dizziness (*Bishop*).

*Variations in blood pressure in diseases of the heart.*—The use of the sphygmomanometer has thrown fresh light on the subject of heart failure. When the heart is competent there exists a blood pressure which is gradient from arteries to capillaries and veins. In failing competency this gradient becomes less steep, for the venous and capillary pressures rise to relatively higher levels until in fact the capillary pressure may relieve itself in exudation. An early sign of failing competency is not only an irregularity in the ventricular rhythm, but a marked irregularity of the systolic pressure of the individual pulsations, so that in measuring the systolic arterial pressure, successive additions to the pneumatic pressure in the armlet will filter out varying proportions of the pulsations until at last there remain but a few scattered pulsations to balance which a fairly high

pressure is needed. *Osler* states that if in cardiac failure we find a blood pressure of 140 mm.Hg. or above, it is clearly an abnormal condition. In early heart failure, such as can be seen in chlorotic girls, the blood pressure is higher than is expected. We may even find a high blood pressure when the pulse at the wrist is small and feeble. If, under treatment with rest, digitalis, etc., we obtain a rise in blood pressure in a case of failing competency, the future may be predicted more accurately. When the propelling force of the heart declines along with a fall in the arterial pressure, the outlook is grave. Continued high blood pressure produces cardiac insufficiency sooner or later. *Elliot* states that if physical signs of cardiac weakness are not in evidence, the heart may still be insufficient as will be readily shown by taking the blood pressure after slight exercise. If with increased rapidity of the heart from the exercise, the blood pressure either does not rise or rises but a moment to fall below what it was when the patient was at rest, the heart muscle is surely insufficient. *Core* is of the opinion that the study of a daily pressure chart, apart from the daily pulse chart, gives little or no information that is of any value. The comparison of the daily variations of the blood pressure and the pulse of the patient taken by the same observer under similar conditions as regards the patient, gives valuable and interesting information about the state of that patient and the course of the disease. Contraction of the arteries is associated with a slow pulse and a high blood pressure, while a relaxation of the arteries is associated with a rapid pulse and a low blood pressure. *Oliver* states that a study of the blood pressure is not of as much use in the study of uncomplicated heart diseases as it is in diseases which complicate the periphery of the circulation. In aortic insufficiency it affords distinctive aid in the diagnosis of this condition, and in estimating the extent of the disease. The distinctive features in aortic insufficiency are a low diastolic and a high systolic blood pressure.

An example of an average formula would be  $\frac{140 S}{80 D}$ . The range of blood pressure: the difference between the minimum and maximum pressure of each pulsation is always above the normal. *Janeway* has observed that in aortic insufficiency the systolic pressure is very fluctuating without obvious cause. *Hare* has confirmed *Hill's* conclusions that in aortic regurgitation there is a remarkable difference in systolic pressure found in the arm and leg, and both of these observers state that this extraordinary difference between the systolic pressure in the arm and leg is a pathognomonic sign of aortic incompetency, as it is not present in other vascular lesions. In one case where the symptoms of aortic regurgitation were not clear, the systolic pressure in the arm was 160 mm.Hg., and in the leg 260 mm.Hg. In mitral stenosis a low blood pressure as a rule exists, a

reading of 80 mm.Hg. is frequently obtained. *Petren* and *Bergmark* state that high blood pressure is associated with cardiac asthma, and they are of the opinion that the high blood pressure is the cause of the cardiac asthma. High blood pressure is frequently associated with myocarditis.

*Variations in blood pressure in diseases of the arteries.*—It is an undoubted fact that, given sufficient arterial pressure, disease of the arteries will sooner or later develop. Arterial disease in itself may cause a rise in blood pressure. *Engel* states that the diagnosis of the early stage of arteriosclerosis stands on a weak foundation, especially as regards objective symptoms. The increase of blood pressure is of little value as it also occurs in heart diseases and nephritis. In arteriosclerosis, however, the process is usually not quite symmetrical, more atheromatous patches occurring in one vessel than in another. As the blood pressure is dependent on two factors, i.e., heart strength and arterial resistance, differences in the caliber of different vessels will cause the pressure in the different arteries to vary. Careful comparative blood pressure observations of the two arms will frequently demonstrate a difference of from 5 to 15 mm.Hg. between the two sides in cases of arteriosclerosis. Such a difference is an important diagnostic sign of arteriosclerosis. The difference must, however, be constant, and be observed at a number of examinations. This sign is also of value in differentiating a primary arteriosclerosis from a sclerosis secondary to nephritis, as in the latter case the variation between the two sides does not occur. When arteriosclerosis does cause a rise in the arterial pressure the rise is chiefly in the systolic pressure. It is generally conceded that there is a stage in the production of arteriosclerosis in which the blood pressure is raised before there is any great structural change in the arteries. *Elliot* states that the manometer will aid in the diagnosis of this stage before any other method of examination gives any assistance. Increased blood pressure, he asserts, may be the earliest objective sign. *Reed* has observed that in arteriosclerosis exercise of all kind, from the gentlest to the most active, is followed after a brief rise of blood pressure and an increase in the pulse rate, by a decided fall from 5 to 15 mm.Hg., according to the severity and duration of the exercise, and the condition of the patient. Generally the pulse rate increases as the pressure falls, but the general exercises, especially those against resistance, will leave the pulse rate unchanged. As a rule the higher the blood pressure before, the greater is the fall after the mild exercise. *Münzer* states that in arteriosclerosis, which is limited to the large blood vessels, the maximum blood pressure is low, while the propelling force of the pulse wave is high. He considers this to be a typical sign of changes in the large blood vessels. *Rudolf* says that one must keep in mind the terminal cases of arteriosclerosis in which in the presence of a large

heart and thickened vessels, we find a low blood pressure. If a small dose of nitroglycerin (1/200 to 1/100 grain) causes a decided fall in the blood pressure, it offers a good prognosis, as it shows that the blood vessels are not sclerosed and are able to respond to dilatation. High blood pressure next to the destruction of the elastic fibers of the media by a mesortitis is, according to *Osler*, the most important single factor in the causation of aneurysm. In the great majority of aneurysms, the blood pressure is normal, but in a great majority of thoracic aneurysms there is a marked difference in the blood pressure of the two arms, and when this difference is greater than 20 mm.Hg., it is a point in favor of aneurysm.

*Variations in blood pressure in diseases of the kidneys.*—High blood pressure plays a leading rôle in the clinical history of chronic nephritis. It furnishes so predominant a share of the subjective discomforts in this disease as to constitute an urgent indication for treatment. *Marcuse* thinks that the increased pressure in nephritis is due to the fact that the obstruction to the flow of the blood in the renal artery by the structural change in the kidney causes an increased supply of blood to go into the suprarenal gland through the collateral branch of the renal artery to that gland. In consequence of this increased blood supply, there results an increased activity and so a rise in the blood pressure. Chronic interstitial nephritis provides generally higher readings than are met with in most other diseases. The readings vary from  $\frac{220 \text{ S}}{140 \text{ D}}$  to  $\frac{260-280 \text{ S}}{160 \text{ D}}$  mm.Hg.

Some of the very highest readings are found in uremia, and observers are mostly agreed that there is a direct relation between uremic headaches, vertigo, amaurosis, vomiting, coma, etc., and the increased arterial pressure. A fall in the blood pressure in uremic coma may take place a few hours before death. *Herrick* states that in interstitial nephritis sphygmographic tracings generally show a rather gradual ascent and a blunt or square apex. In regard to the prognosis in interstitial nephritis he says that the profession probably does not make sufficient use of the sphygmograph. Its value consists not so much in determining unusually high blood pressures, as in noting a change in the blood pressure. A pressure that steadily rises from week to week or month to month in spite of care on the part of the patient and the exercise of his best skill on the part of the physician, is naturally a cause for alarm. *Fox* and *Batroff* state that the blood pressure in all cases of chronic interstitial nephritis with retinal hemorrhages is uniformly high. According to *Peter* the severity of the eye symptoms in chronic interstitial nephritis bears a definite relationship to the degree of increase in blood pressure. In chronic parenchymatous nephritis high blood pressure is also present, although not so frequently, or so high as in interstitial ne-



phritis. In acute scarlatinal nephritis the blood pressure is, as a rule, only moderately high. In amyloid kidney and in cyclic albuminuria the blood pressure, as a rule, is normal or even subnormal. A low blood pressure in a case of amyloid nephritis, according to *Gibson*, is a valuable diagnostic point in differentiating this condition from interstitial nephritis. *Mills* says that almost without exception a low urea elimination and a high blood pressure occur in chronic nephritis.

### PHENOLSULPHONEPHTHALEIN IN THE DIAGNOSIS OF RENAL FUNCTION

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Phenolsulphonephthalein was first prepared by Ira Remsen and described by him in the *American Chemical Journal*, Vol. VI, page 280, and by *Sohn* in the same publication, Vol. XX, page 257. *E. A. Slagle* in the *Journal of Pharmacology and Experimental Therapeutics*, Vol. I, page 663, describes a practical method for the preparation of this substance.

The drug is a bright-red crystalline powder, somewhat soluble in water, more so in alcohol, insoluble in ether. Its dilute alkaline solution is of a purer red than phenolphthalein, but a more strongly alkaline solution is purple. It is readily soluble in solutions of sodium carbonate and has a stronger avidity as an acid than phenolphthalein. It is non-toxic and non-irritating to the kidneys in medicinal doses and is rapidly eliminated through them. Given by the mouth it appears in the urine in about an hour and a half; administered by subcutaneous injection it shows in the urine in about six or ten minutes in normal cases. For clinical work it is best given subcutaneously.

The dose of phenolsulphonephthalein for subcutaneous injection is 6 milligrams in solution (1 c.c.). The preparation, when ready for injection, is a mono-sodium or acid salt which is red in color and which is slightly irritating locally when injected. A few drops of a  $\frac{2}{N}$  NaOH solution should be added until the color is changed to Bordeaux red, when the preparation is not irritating any longer.

**Preparation of the Patient.**—The customary chemical and microscopical examination of the urine should have been made and a thorough physical examination not neglected. Twenty or thirty minutes before the test is given the patient should drink 300 to 400 cc. of water in order to secure free urinary secretion, otherwise delayed time of excretion may be due to lack of secretion. Under aseptic precautions a catheter should be passed and the bladder completely

emptied (in prostatic cases with a large amount of residual urine, previous gradual withdrawal and a course of urotropin advisable). The time is then noted. One cc. of the solution containing 0.006 gram phenolsulphonephthalein to the cc., is injected into the subcutaneous tissues of the upper arm. The end of the catheter is placed in a test tube containing a drop of a 25% NaOH solution and the time of appearance of the first faint pinkish tinge noted. The catheter is then withdrawn or closed, and at the end of the first hour the urine is voided or withdrawn; this is repeated at the end of the second hour.

Where ureteral catheters or the segregator is used there is continuous drainage into separate receptacles for the first and second hour periods.

Each hour specimen is then carefully measured; specific gravity taken and urea estimated. Sufficient 25% NaOH is added to make the urine decidedly alkaline in order to elicit the maximum color. This solution is placed in a measuring flask (1 liter), and distilled water added up to the liter-mark, the solution is thoroughly mixed, a sufficient quantity filtered and placed in the cup of the Duboscq colorimeter for comparison with the standard solution in the other cup. By means of the Duboscq instrument minute and accurate estimations of the percentage amount of the drug eliminated may be easily made.

Rowntree and Geraghty base their studies on the results of some 200 injections given to 150 patients. In normal cases they find the first appearance of the drug in from six to eleven minutes and that 40 to 60 per cent. is eliminated in the first hour, and 20 to 25 per cent. in the second hour. Normal elimination therefore appears to be 60 to 85 per cent. during the two hours.

The same observers also found that the permeability of the kidney to this drug is diminished in both chronic parenchymatous and chronic interstitial nephritis—the decrease being most marked in the interstitial variety. In unilateral and bilateral disease the absolute amount of work done by each kidney as well as the relative proportion may be determined when the urine is obtained separately from each kidney. Pyelitis may be differentiated from pyelonephritis by the presence or absence of defective elimination.

The same authors also state that the color is not affected by pus, the urinary coloring or by the amount of urine excreted within certain limits.

Goodman and Kristeller, in *Surgery, Gynecology, and Obstetrics*, January, 1911, report a series of cases tested by this method and sustain Rowntree and Geraghty in their assumptions (*Abst. elsewhere in this issue of ARCHIVES OF DIAGNOSIS*). E. L. Keyes, Jr., at a recent meeting of the New York Academy of Medicine, stated he regarded the test to be of great value in functional renal diagnosis.

## **Progress of Diagnosis and Prognosis**

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### **GENERAL METHODS OF EXAMINATION—SYSTEMIC AFFECTIONS—DISORDERS OF GEN- ERAL METABOLISM**

**A Simple and Quick Method for the Quantitative Determination of Uric Acid in the Urine, Blood and other Serous Fluids—AUFRECHT, Berliner klin. Wochenschr., April 3, 1911.**

An amount of 25 c.c. of the urine is condensed to about 1/5th its original volume in an evaporating dish on a water-bath. The residue is placed into a special centrifuge tube to which is added some distilled water. (These tubes are manufactured by a Berlin firm.) A saturated solution (35 to 100) of ammonium chlorid is then added. After the cooled contents of the tube have been well mixed they are centrifuged for from 3 to 5 minutes. The clear natant fluid is then decanted, and the brownish-yellow sediment to which has been added ammonium sulphate (5 c.c.) is again centrifuged. Following this the clear natant fluid is again decanted and some more of the ammonium sulphate solution is added; renewed centrifuging for a few minutes. In order to obtain a deposit free from chlorine it is best to subject it once more to the same process. Following this, the sediment consisting of ammonium urate is dissolved in about 10 c.c. of a warmed sodium carbonate solution; the solution is then placed into a beaker, acidulated with 5 c.c. concentrated sulphuric acid, heated to boiling and quickly titrated with 1/100 potassium permanganate solution until the appearance of a red coloration. Every cubic centimeter of the employed 1/100 normal permanganate solution corresponds to 0.74 milligram uric acid. The entire manipulation is finished in not more than one hour. If the urine contains coagulable albumin it is necessary to acidulate it in advance with sufficient acetic acid that the albumin will be separated when the urine is boiled. The determination of uric acid in the blood, lymph and transudates is accomplished in a similar manner. Ten c.c. of the fluid is diluted with ten times its amount of water, acidulated with a few drops of diluted acetic acid, heated to boiling after which the separated albuminous material is filtered off. The filtrate is then condensed to a small volume on the water-bath, placed in the centrifuge-tube, concentrated solution of ammonium chlorid added to it, and after cooling of the mixture centrifuged. The further manipulation is the same as with the urine. MILL.

**Oxaluria**—S. SERKOWSKI and MOZDENSKI, *Zeitschr. f. physiolog. Chemie*, Vol. LXX, p. 264.

There exists no relation whatsoever between the excreted amounts of uric and oxalic acids. The excretion of oxalic acid occurs independently of that of uric acid. There seems to be, however, some relation between the phosphates and oxalic acid. The amount of oxalic acid increases with the augmentation of the acid phosphates, and decreases when the latter are diminished. There exists no connection between the amount of oxalic acid dissolved in urine and the oxalic acid contained in the sediment. WESTERN.

**Sweat: its Secretion, Contents of Sodium Chlorid and Reaction**—C. KLITTSTEINER, *Archiv f. Hygiene*, Vol. LXXIII, No. 3.

Secretion of sweat is increased by atmospheric humidity, high external temperature, muscular activity, hot beverages and warm baths. Psychic occurrences play an important rôle: The greater the sweat excretion the smaller is that of urine, and vice versa. Under given conditions, the face furnishes most sweat, after this the arm, then the lower leg. The sodium chlorid contents is dependent upon the rapidity of the sweat excretion. The greater the rapidity the higher is the amount of excreted sodium chlorid. Diaphoretic agents only influence the rapidity of secretion. If more sodium chlorid is ingested more of it will appear in the sweat. The sweat of the face contains most NaCl; that of the lower leg least. The sweat is ordinarily sour; the highest acidity is found in the sweat of the arm; that of the face is less acid, and the sweat of the lower leg is least sour. FRY.

**Clinical Importance of Goldschmiedt's Alpha-Naphthalene Reaction in the Urine of Nurslings**—E. MAYERHOFER, *Zeitschr. f. physiolog. Chemie*, Vol. LXX, p. 391.

The alpha-naphthalene reaction of Goldschmiedt for glycuronic acid is well adapted for the early recognition of intestinal putrefaction. The indican reaction is only faintly positive in the graver forms of intestinal disturbances of nurslings. Glycuronic acid can nearly always be demonstrated in the urine of abnormally nourished, though thriving infants, while the indican reaction is mostly negative. WESTERN.

**The Cystein Contents of Animal Organs**—V. ARNOLD, *Zeitschr. f. physiol. Chemie*, Vol. LXX, p. 314.

The organs of warm-blooded vertebrata contain larger amounts of cystein than those of cold-blooded animals and insects; especially large is the cystein contents of the liver. WESTERN.

**Color Reaction of Proteid Substances with Sodium Nitroprusside—V.**  
ARNOLD, *Zeitschr. f. physiol. Chemie*, Vol. LXX, p. 300.

A series of proteid substances produces purple-red coloration with sodium nitroprusside and ammonia. Addition of acetic acid causes the coloration to disappear immediately. The color reaction is not evanescent; the coloration fades gradually in the course of about 15 minutes. The reaction is due to the cystein contents of the proteids. Its intensity depends upon the amount of reacting cystein groups.

WESTERN.

**Distribution of Reducing Substances in Human Blood—H. LYTCKENS and J. SANDGREN—***Biochemische Zeitschr.*, Vol. XXXI, p. 153.

The sugar of the blood is nearly all contained in the serum; the blood corpuscles contain no or nearly no grape-sugar. Reducing substances other than glucose are also found in the serum and blood cells. It is therefore wrong to entirely attribute the reduction qualities of the total blood to its contents of glucose.

WESTERN.

**Method of Staining Granular Casts and other Tube Products—H. B. ERDMAN, Jour. A. M. A., March 18, 1911.**

Sediment the fresh urine in a centrifuge; pour off the supernatant urine, and fill the tube with 0.4 per cent. sodium chlorid solution. Gently shake the deposit, centrifuge, pour off the solution, and repeat the washing, this time centrifuging till the sediment forms a dense clump at the bottom of the tube. Slowly pour off the solution, invert the tube and allow it to drain for a few moments; the sediment will remain in the point of the tube. With a long pipette transfer a small drop of sediment to a cover-glass, gently spread with a fine platinum wire loop, and dry in air. The spread must be thin. Treat for three minutes with a 5 per cent. aqueous solution of mercuric chlorid. Wash thoroughly in water. Stain for five minutes with a fresh mixture of equal parts of the following solutions: methylene blue, 0.3 per cent. aqueous solution; fuchsin, 0.02 per cent. aqueous solution; wash in water, dry, and mount in balsam. To demonstrate fat, stain the fixed spread for five minutes with a solution of Sudan III in 70 per cent. alcohol. Wash in water, and apply the double stain as before. Mount in glycerin or glycerin jelly. Mucin and chromatin stain violet to indigo, granular casts and protoplasm stain from pink to dark red, waxy casts stain bright red and fat globules bright orange. One washing may suffice when the urine contains a very small amount of sediment. The stains may be used singly, first staining with fuchsin, washing in water and counter-staining with methylene blue. Leucocytes and epithelial cells stain distinctly, the protoplasm of renal epithelium usually tak-

ing a dark red color, that of squamous epithelium a light pink. Red blood cells may show a pale salmon color. Mucinous products are distinguished chiefly as filaments, agglutinations, showing their structure by longitudinal or spiral striations, and homogeneous casts. These forms merge into each other, there are no sharp dividing lines. Granular casts stain red and are thus more easily found than in the unstained sediment. Homogeneous casts staining red may be found in connection with granular casts. They are frequently of high density and refraction, assuming a waxy character.

WESTERN.

**Tryptic and Diastatic Ferments in the Feces**—K. HIRAYAMA, *Zeitschr. f. experimentelle Pathologie u. Therapie*, Vol. VIII, No. 3.

The fecal trypsin is not reduced in fever; in diarrhea it occurs in irregular amounts. The diastatic ferment is diminished in diarrheal evacuations; in fever it occurs in fluctuating quantities.

WESTERN.

**Diagnostic Value of Noguchi's Butyric Acid Test in the Cerebro-Spinal Fluid**—S. STROUSE, *Jour. A. M. A.*, April 22, 1911.

Author advances the following conclusions: Tests for increased globulin in the spinal fluid are easier to perform than is the total cell-count, and have practically the same diagnostic importance. The butyric acid test of Noguchi is convenient and accurate. The use of this reaction gives information of considerable value in diagnosis. The reaction is positive in general paralysis and cerebrospinal syphilis; negative in brain tumor, cerebral arteriosclerosis and psychoses. A positive reaction in a doubtful nervous case is presumptive evidence in favor of the diagnosis being a syphilitic or parasymphilitic disease of the nervous system. In tabes dorsalis author's results are not in agreement with previous reports, the reaction being present in only 33 1/3 per cent. The reaction is positive in all cases of acute meningitis and absent in meningeal irritation without actual inflammation. It is always present in tuberculous meningitis, and its presence is an aid in the diagnosis. The absence of the reaction in cases of suspected tuberculous meningitis is of great value in excluding meningitis.

WESTERN.

**Determination of the Condition of the Bone Marrow by Means of Subcutaneous Injection of Gelatin**—A. v. Decastello and A. Krjukoff, *Med. Klinik*, Feb. 5, 1911.

Forty c.c. of a 10 per cent. solution of gelatin is injected subcutaneously. Authors applied this test in 42 cases. Normally a marked hyperleucocytosis is produced if the bone marrow responds. The test is of diagnostic and prognostic value.

MILL.

**Basedow's Disease and some of its Early Concomitants**—C. KRAUS, Med. Klinik, Jan. 29, 1911.

A very early sign of exophthalmic goiter is severe sudden pain in the upper abdomen resembling gall stone colic or a tabetic crisis. The gall bladder, however, is not tender, the attacks usually come on at night, and do not correspond to the intake of food. Another early sign is a marked weakness of the legs without any paralysis. An important early sign is the increased radiation of heat from the skin, the axillary temperature being often as high as the mouth temperature. MILL.

**Congenital Family Cholemia**—A. W. MACKINTOSH, A. W. FALCONER and A. G. ANDERSON, Edinburgh Med. Jour., Jan., 1911.

Cholemia is a condition of chronic icterus dating from a few weeks after birth, marked by splenomegaly, an apparently normal liver and very definite changes in the blood. One of the most remarkable features of the condition is the frequent absence of any symptoms of disease. The condition appears to have little tendency to shorten life. Not a few of the famial cases, which were found to present all the characteristic features of the disease, were discovered during a systematic examination of the family. The blood shows marked poikilocytosis and the presence of megaloblasts. Repeated epistaxis is not infrequent and more rarely hemorrhages from the gums occur. SACHS.

**Splenomegaly with Recurrent Jaundice**—F. P. WEBER, British Jour. of Children's Diseases, March, 1911.

Moderate splenomegaly in children of from 5 to 16 years of age may be almost the only evidence of inherited syphilitic pain, but in such cases Wassermann's seroreaction for syphilis would doubtless generally give a positive result. The splenomegaly of inherited syphilis is often accompanied by occasional slight attacks of obstructive jaundice and excess of urobilin in the urine. Hepatic cirrhosis with or without ascites, may be associated with the splenomegaly. In these cases the inherited syphilis may be associated with some degree of infantilism. Splenomegaly in children may be the most important sign of hepatic cirrhosis, when the former is either secondary to or due to the same cause as the latter. SACHS.

**Neuro-Retinitis in Anemia**—R. B. HIRD, Practitioner (London), Feb., 1911.

There is no doubt that a neuro-retinitis does occasionally occur in anemia. The fundus may show definite pallor in marked cases owing to the anemic state of the choroid. The veins are pale and

the arteries are definitely contracted and pale. Optic neuritis is occasionally present and may relapse on the recurrence of the anemia. Neuro-retinitis in anemia may be confused with albuminuric neuro-retinitis. In this case a thorough examination of the cardiovascular system together with the blood and urine should determine the case. Intracranial tumors may give rise to a very similar picture including a white fan figure at the macula. Lead poisoning will usually reveal itself in a blue line on the gums. Syphilis may lead to a similar retinal change. SACHS.

**Hodgkin's Disease and Intermittent Pyrexia**—F. D. HALL, Practitioner (London), April, 1911.

One of the most remarkable features of Hodgkin's disease is the recurrence of periods of pyrexia usually lasting from 4 to 9 or 10 days, and separated by intervals of almost complete freedom of fever. The recognition of the relapsing forms of pyrexia may be of great assistance in the diagnosis of some doubtful cases. The temperature may be continuously high for a long period, and periods of high fever may then alternate with periods of low fever. SACHS.

**Levulosuria**—O. ADLER, Pflüger's Archiv, Vol. CXXXIX, p. 93.

Among 1494 diabetic urines author found 2 cases of chronic levulosuria and 2 of pentosuria. Levulosuria is never accompanied by acidosis. The excretion of levulose in diabetes occurs very rarely. WESTERN.

**Lordotic Albuminuria**—A. LURY, Jahrbuch f. Kinderheilkunde, Vol. LXXII, No. 6.

Provoked albuminuria, probably also lordotic albuminuria, can only ensue when there exists mobility of the kidneys. MILL.

**Clinical Value of the White Line of Sergent**—MAURICE, Lyon médical, 1911, No. 8.

Sergent's symptom which may be pathognomonic for adrenal insufficiency has been present in two of the author's cases. The symptom is elicited as follows: if in the presence of adrenal insufficiency the point of a finger is lightly drawn over the abdomen a white line will shortly appear where the finger has come in contact with the skin; this line becomes gradually more distinct, remains stationary for from 3 to 6 minutes, after which it rapidly disappears. ZIMMER.



## INFECTIOUS DISEASES

**The Wassermann Reaction**—E. SCHEIDEMANDEL, *Deutsches Archiv. f. klin. Medizin*, Vol. CI, Nos. 5 and 6.

Results of the examination of 1212 cases. The strongly positive Wassermann reaction is almost absolutely specific for syphilis and as reliable as the best biological methods. Incomplete (slightly positive) reactions ensue also in the presence of high fever, tuberculosis, tumors, diabetes, etc. A single negative reaction does not prove anything.

WESTERN.

**The Diagnostic and Prognostic Value of the Diazo Reaction in Pulmonary Tuberculosis**—J. v. SZABOKY, *Zeitschr. f. Tuberkulose*, Vol. XVII, No. 2.

The urinary examination may elicit a positive diazo reaction in all stages of pulmonary tuberculosis. The diagnostic value of the diazo reaction is quite insignificant. A constantly occurring diazo reaction in the urine of tuberculous individuals means a bad prognosis. The continuous absence of the diazo reaction points to a favorable prognosis in most cases. A diazo reaction occurring occasionally does not permit of definite conclusions.

FRY.

**Spengler's Differential Staining Methods for Tubercle Bacilli**—R. C. STYLES, *Practitioner* (London), March, 1911.

Spengler has stated that in the sputum of a small percentage of phthisical cases very few or no bacilli are found by the ordinary Ziehl-Neelsen method, but that when the farbächt (color-fast) method is employed, bacilli are sometimes found in large quantities. The explanation given by Spengler is that these so-called Perlsucht bacilli as found in the human being exhibit such a fine acid susceptibility that the ordinary Ziehl-Neelsen method, using acid for decolorization, is unsuccessful. The farbächt method is distinguished from the older staining methods by the omission of acids, and may be used for all members of the acid-fast group. Author could not confirm Spengler's statements. In none of his cases was a positive result obtained by the farbächt method when the Ziehl-Neelsen method was negative. It would appear, therefore, that a pure Perlsucht infection is rare, or that these bacilli are not in all cases discolored by the use of acids.

SACHS.

**Diagnostic Value of the Demonstration of Tubercle Bacilli in the Feces**—F. RITTEL-WILENKO, *Wiener klin. Wochenschr.*, April 13, 1911.

Tubercle bacilli appear, as a rule, in the feces in more advanced cases of tuberculosis only. The appearance of tubercle bacilli in

the feces is diagnostically important for the recognition of a specific involvement of the intestine in the tuberculous. MILL.

**Early Diagnosis of Tuberculosis**—SCHWALM, Med. Klinik, March 26, 1911.

The diagnosis of incipient tuberculosis depends in the first instance and under all circumstances upon the results of a very accurate clinical examination: body heat, general condition, weight, pulmonary findings and sputum. Only when there is an urgent suspicion of incipient tuberculosis and if the nature of the affection cannot be definitely ascertained by other means, the tuberculin reactions may be resorted to. The subcutaneous tuberculin test should only be made in a closed institution, as an exact medical observation of the reaction is imperative if it is to serve for diagnostic purposes. MILL.

**The Röntgen Rays in the Diagnosis of Pulmonary Tuberculosis**—M. LEVY-DORN, Berliner klin. Wochenschr., April 3, 1911.

The Röntgen rays are of import in the early diagnosis of pulmonary tuberculosis; they render the diagnosis more certain in nearly every case. The experienced percussor and auscultator rarely obtains a new point by a Röntgen examination; the latter is of far greater value to the less experienced practitioner. The Röntgen examination cannot replace but should supplement the other methods of diagnosis. MILL.

**The Caseation Process in Human Tuberculosis**—Comptes rend. des séances de l'acad. des sciences, 1911, No. 2.

Tuberculous caseation is the result of a localized toxic activity of the tubercle bacillus. There occurs a granular-fatty degeneration and a fragmentation of granular elements. The amount of fat produced in the tubercles is smaller in man than in the animal. ZIMMER.

**Diagnosis of Infantile Pulmonary Tuberculosis**—E. RANKE, Archiv f. Kinderheilkunde, Vol. LIV, Nos. 1-3.

According to author there are three types of pulmonary tuberculosis in childhood: (1) phthisis; (2) generalized tuberculosis, and (3) hilus catarrh. The first form occurs only after the fifth year of life and permits a favorable prognosis in comparison with the generalized tuberculosis. The last form is met with in pale children with so-called scrofulous manifestations, catarrhal states of the upper respiratory tract and pulmonary apices and positive tuberculin reaction. MILL.

**Ultra-Chronic Pulmonary Tuberculosis**—H. B. SHAW, *Lancet*, Jan. 7, 1911.

Of 1532 patients who had tubercle bacilli in their sputum and signs of pulmonary disease, 303 cases had the disease for more than 5 years; 215 of the latter cases have had, so far as could be ascertained, a purely pulmonary tuberculosis. From this number of patients observations are presented by the author to show how chronic may be the course of pulmonary tuberculosis subjected to the very trifling help so far as the direct treatment is concerned in dispensary practice. The occupations of these patients show that indoor employment does not necessarily preclude survival with the disease during a considerable number of years. SACHS.

**Erysipelas of Nurslings**—MILHIT and H. STÉVENIN, *Progrès méd.*, 1911, No. 4.

Besides the typical forms there may occur in nurslings such atypical forms of erysipelas that their true nature may not be recognized. There are forms of erysipelas in nurslings which manifest themselves solely by the appearance of an edema; the latter is circumscribed or general, of hard or soft consistence, and of a non-inflammatory nature. The general condition is little disturbed, but the prognosis, especially during the first month of life, is very unfavorable. A special group of this type of erysipelas is formed by the cases with exceedingly rapid moving edema. In another group of cases the disease manifests itself by rapidly succeeding abscesses in different places of the body. The edematous form of erysipelas in the nursling may be at first mistaken for cardiac or renal edema or sclerema neonatorum. On close examination of such cases there will be noticed on the margin of an edematous portion a reddish seam or in places desquamation; these occurrences are characteristic for erysipelas. Moreover, streptococci may occasionally be found in the fluid of the edema. Again, in the form of erysipelas characterized by the production of multiple abscesses, the circumscribed edemas with reddish seam may point to the proper diagnosis. The prognosis is nearly always unfavorable in the first three or four months of life; in older nurslings the prognosis is more favorable. ZIMMER.

**Articular Affections in Scarlet Fever and Measles**—K. FRITSCH, *Brunns' Beiträge z. klin. Chirurgie*, Vol. LXXII, No. 1.

Author discriminates between the purely scarlatinous articular inflammation (produced by the unknown causative agent of scarlatina) which never suppurates and heals spontaneously as a rule and the suppurative-scarlatinous articular inflammation which is a mixed infection with streptococci on a basis of an articular synovialis

aggravated by the causative agent of scarlatina. The articular involvements appear to ensue rarely after measles; however, they occur sometimes with very grave symptoms. STEIN.

**Scarlatinal Thyroiditis**—J. BAUER, *Monatsschr. f. Kinderheilkunde*, 1911, p. 560.

Author observed in the wake of three mild cases of scarlet fever long-continued swelling of the thyroid glands on the 10th, 17th and 46th day respectively. This complication was characterized by a low fever of some days' duration and localized pains. Other complications or thyroid phenomena did not ensue. MILL.

**Value of Lumbar Puncture and of the Leucocyte Count in the Diagnosis of Acute Poliomyeloencephalitis**—J. L. MORSE, *Arch. of Pediatrics*, March, 1911.

During the acute stage of acute poliomyeloencephalitis the cerebrospinal fluid is clear and not infrequently under somewhat increased pressure; it often shows a fibrin clot which may persist for 2 or 3 weeks and perhaps longer; it always contains an excess of cells; these cells are chiefly of the mononuclear type, most of them being lymphocytes. These changes are present before the appearance of the paralysis. They are, however, identical with those found in tuberculous meningitis, the disease with which it is perhaps most likely to be confounded. Of course, the cerebrospinal fluid in tuberculous meningitis contains tubercle bacilli. They are missed in about 90 per cent. of the cases, however, if the examination is the usual routine one. If tubercle bacilli are found in the cerebrospinal fluid, the diagnosis of tuberculous meningitis is, of course, positive; if they are not found, the examination of the fluid is of no assistance in the diagnosis between tuberculous meningitis and acute poliomyeloencephalitis. The leucocyte count is of little or no assistance in the early diagnosis of acute poliomyeloencephalitis. There is at present not sufficient evidence to show whether or not there is a relative or absolute lymphocytosis in the early stages. If further investigation shows that this is a fairly constant phenomenon, it should be of considerable assistance in the early diagnosis.

WESTERN.

**Influenza?**—J. TRUMPP, *Münchener med. Wochenschr.*, March 7, 1911.

The present status of influenza diagnostics is still very unsatisfactory. A precise diagnosis of influenza can only be made when a bacteriological examination of the nasal and tracheal secretions in all dubious cases is regularly executed. Mild and abortive cases of influenza are hardly ever definitely stamped as such. Of 37 cases

of the infection which the author has closely studied during the last few months but 7 exhibited the typical clinical picture of influenza. The remaining 30 cases run a quite uniform course, viz., the children who felt well on arising showed at noon time diminished desire to eat and play; later on they felt hot. The temperature, 39 to 40 deg. C., was out of proportion to the mild subjective phenomena. After a few hours' rest in bed all sense of illness disappeared. The eyes were clear, not reddened, respiration regular, the skin neither especially dry nor moist or sticky and free from exanthemata; frequency of pulse corresponded to the age and temperature; there was some dry cough and constipation. In mouth and pharynx there was a thin, whitish coat of the tongue, uniform redness of the loosened pharyngeal mucosa. There were some occasional small red spots on the palate which, in connection with a few red spots on the mucosa of the cheeks, pointed to the early stage of measles. Author lays stress upon the latter phenomenon to show that one should be cautious concerning an early diagnosis of measles even when there are present all the pertaining symptoms as, high fever, cough, conjunctival hyperemia and exanthema of the palate. Besides aforementioned symptoms there was always found a doughy infiltration of the pretty large, flattened submaxillary glands which appeared almost pathognomonic of the disease.

MILL.

**Pneumococcal Peritonitis**—H. RISCHBIETH, *Quarterly Jour. of Medicine*, Jan., 1911.

This paper is based upon a series of 57 cases in children and 1 case in an adult. The diagnosis can be made quite accurately but not from the abdominal condition alone. The full history, mode of onset, order of association of symptoms, and examination of the chest are of great importance. At the onset and for the first few hours the exact diagnosis is often impossible. The presence of signs in the chest or a history of pneumonia within 2 or 3 weeks may be suggestive, and the absence of previous symptoms of malaise excludes the perforation of enteric fever. As regards the abdomen, the absence from the first of localized pain and deep tenderness over the appendix region, absence of localized swelling, the general character of the abdominal rigidity, the general distribution from the first of the superficial tenderness, or the first appearance of this tenderness in an eccentric site, not McBurney's point, but very early becoming general in any case, the general distribution of the deep tenderness which is not accentuated over the appendix area, and diarrhea at the onset are suggestive of pneumococcal peritonitis rather than appendicitis. When the abdominal effusion has occurred there are signs in the chest in nearly all cases. The points

of importance are, a history or the presence of pneumonia before the onset of general peritonitis, and the mode of onset of the abdominal condition. The mortality in the series described was 88.8 per cent. SACHS.

**Chills in Malta Fever**—F. LASTARIA, *Gazetta degli Ospedali*, Feb. 19, 1911.

On account of their acuteness and persistence chills are the principal symptom of malta fever infection. These chills may overshadow all the other manifestations of the infection on account of their intensity, duration and repeated occurrence. ZIMMER.

## RESPIRATORY AND CIRCULATORY ORGANS

**Pectoral Fremitus**—H. HOCHHAUS, *Deutsches Archiv f. klin. Medizin*, Vol. CI, Nos. 5 and 6.

The degree of pectoral fremitus is dependent in the first instance upon the condition of the lung, in the second instance upon that of the pleura and thoracic wall. In the individual case it is difficult to determine which factor plays the principal rôle, as one cannot always recognize with certainty the pleural exudates and inflammatory states of the thoracic wall. The pectoral fremitus should only be employed in diagnosis with a certain degree of caution. If there is an increase of fremitus an infiltration of the lung exists very likely; if there is a decrease the question whether one is confronted with infiltration or pleuritic exudate must be determined by other means. WESTERN.

**Mediastinal Affections**—P. KIDD, *Lancet*, March 4, 1911.

Author reports 9 cases of mediastinal affections. (1) A sub-sternal thyroid tumor which simulated a mediastinal new growth, operated, recovered. (2) A mediastinal cyst, operated, recovered. (3) A mediastinal abscess which perforated the esophagus and trachea, and caused subcutaneous emphysema and cellulitis; patient died. The condition probably originated in the subtracheal lymphatic glands, possibly as a result of tuberculosis. (4) A mediastinal growth masked by pericardial effusion; patient died. At necropsy the mediastinal glands in front of the trachea and bronchi were infiltrated with a firm, whitish-yellow growth forming a mass about the size of a duck's egg. There was a small nodular growth in the upper lobe of the left lung. (5) A mediastinal growth marked by pleural effusion. Patient died, and at necropsy a large pleural effusion was found at the right side, and the trachea and the roots of each lung were imbedded in a large whitish growth extending widely into the lower lobe of the right lung. (6) A case of tuber-

culosis of the mediastinal glands followed by pleural effusion; recovery for some years; death from tuberculous meningitis. (7) A case of tuberculosis of the mediastinal glands which compressed the right bronchus. This case recovered. (8) A case of tuberculosis of the mediastinal glands which involved the lung by direct infection through the bronchi. The patient died from tuberculous meningitis. (9) Tuberculous abscess of bronchial glands; bronchopneumonia developed simulating acute tuberculosis; death from septicemia.  
SACHS.

**Pulmonary Hydatids**—D. M. MORTON, *Australian Med. Jour.*, Feb. 20, 1911.

In almost all cases of pulmonary hydatids pain is a marked symptom. This is in strong contrast with hydatids elsewhere, which are usually remarkably painless. The pain of pulmonary hydatids is sharp, pleuritic in character and in a large proportion of the cases is the evident cause of the patient's coming for treatment. Cough is variable, and may be absent; dyspnea is almost invariably present, and hemoptysis occurs in a considerable proportion of the cases. In many instances nutrition is retained remarkably well, and a long history of pulmonary symptoms without marked loss of weight should suggest hydatid disease as against pulmonary or pleural tuberculosis.  
SACHS.

**Practical Estimate of Cardiovascular Disease**—G. HONIGMANN, *Berliner klin. Wochenschr.*, March 20 and 27, 1911.

The so-called physical methods of examination which were advanced at a time when pathological anatomy alone was the scientific basis of medical thought only serve for the demonstration of anatomical changes which permit indirect conclusions concerning some of the physiological disturbances. The insufficiency of these methods of examination has stimulated a number of experimenters and clinicians to devise new physiological means by which the functional ability of the heart may be estimated. None of these newer methods of examination, per se, can definitely answer the question whether the cardiovascular apparatus is functionally patent. The article is full of common sense and practical points, especially as far as the prognosis is concerned, but it does not lend itself to a brief abstract. It should be studied in the original.  
MILL.

**Absence of Abdominal Respiratory Movements as an Indication of Pericarditis**—W. E. WYNTER, *Clinical Jour. (London)*, Feb. 22, 1911.

The sign suggested by Wynter is an inhibition of the action of the diaphragm indicated by suppression of normal abdominal respiratory movement. When the front of the body is fully exposed the

stillness of the abdomen is very striking. The inertness of the diaphragm is not merely inferred, but by Röntgen ray screen examination can be actually observed. A tendency to dilatation of the hollow abdominal organs, especially the stomach, can be observed through the screen. In addition collapse and loss of function of the lower lobes of the lungs and slight upward displacement of the heart and of the organs beneath and in contact with the diaphragm can be observed. This sign of pericarditis is very valuable, as it may precede and outlast other indications of pericarditis. SACHS.

**Congenital Pulmonary Stenosis with Special Consideration of the Nature of the Secondary Blood Changes**—E. P. WEBER and G. DORNER, *Lancet*, Jan. 21, 1911.

Secondary polycythemia in cases of congenital heart disease is rarely equaled in degree by the secondary polycythemia which sometimes occurs in chronic acquired disease of the mitral valve and in adherent pericardium. It is more nearly rivaled by the marked secondary polycythemia occasionally associated with late stages of pulmonary emphysema, chronic bronchitis, asthma, old bilateral pleuritic adhesions, chronic interstitial pneumonia, and pulmonary fibrosis. SACHS.

**Rogers' Disease**—A. PETIT, *Progrès méd.*, 1911, No. 4.

By Rogers' disease is understood the presence of a congenital communication between both cardiac chambers. The condition is rarely observed and is generally diagnosed as a valvular lesion. The affection may be recognized by the existence of a systolic bruit with its maximal intensity neither at the apex nor at the basis but in the center of the precordial region. In the absence of any other cardiac malformation, the functional disturbances of Rogers' disease are but little marked. Dyspnea is not pronounced and usually ensues only when the patient is exerting himself. In uncomplicated cases there is no cyanosis because the blood in spite of the communication cannot enter from the right into the left ventricle on account of the higher pressure in the latter; if a disturbance of the pulmonary circulation supervenes during a disease of the lungs then the conditions for the production of dyspnea and cyanosis are given. In uncomplicated cases there exist no dyspnea and cyanosis, and the diagnosis must principally rest upon the auscultatory findings. Auscultation elicits a pronounced harsh sound, generally accompanied by a hum, which lasts in uninterrupted intensity during the entire systolic period; its maximal intensity is heard over the articulation between the third left costal cartilage and the sternum. Occasionally there are found accentuation of the second pulmonary sound, dilatation and hypertrophy of the right ventricle and hyper-



trophy of the left ventricle. The affection, per se, is benign in nature; in the presence of intercurrent diseases there may appear cyanosis, dyspnea or asystole. The occurrence of an infectious disease favors the production of endocarditis and compensatory disturbances ensue readily.

ZIMMER.

**Venous Murmurs heard at the Root of the Neck in Children**—C. COOMBS, *British Jour. of Children's Diseases*, March, 1911.

In a majority of children between the ages of 3 and 15 years, a murmur is heard immediately below the sternoclavicular joint or joints. It is commoner and louder on the right side. It is a continuous murmur, but is accentuated at the beginning of systole and of diastole, especially the latter. It is heard better when the head is fully retracted and laterally rotated. When the patient is in the recumbent position it is usually abolished. This venous murmur is produced in the internal jugular vein and has no diagnostic significance.

SACHS.

**Luetic Disease of the Aorta**—H. GRAU, *Zeitschr. f. klin. Med.*, Vol. LXXII, Nos. 3 and 4.

The Wassermann reaction has definitely demonstrated the syphilitic origin of nearly every case of aneurysm. Author draws attention to the frequency of syphilitic aortitides without aneurysm; he describes 23 cases of syphilitic disease of the aorta, 3 cases of mixed etiology and 16 cases of non-luetic affections of the aorta. The average age in the cases of syphilitic origin was higher than in the instances of endocarditic aortitis. Even in the early period of the second stage of syphilis the heart is frequently involved; for this reason the heart of the syphilitic should be under continued observation. The subjective symptoms in these cases generally occur very late. The objective examination does not tend to a differential diagnosis between luetic and non-luetic affections of the aorta. In pronounced luetic disease of the aorta anti-syphilitic treatment avails no longer.

WESTERN.

**Peripheral Localized Arteriosclerosis**—E. TEDESCHI, *Il Tommasi*, Jan. 30, 1911.

The peripheral localization of arteriosclerosis may be a manifestation of general arteriosclerosis or it may occur in an isolated form. Examples of the peripheral localized arteriosclerosis are certain types of gangrene of the extremities and intermittent claudication. Again, certain occupation neuroses (local spasms) may be caused by peripheral arteriosclerosis. Some symptoms closely re-

sembling intermittent claudication are only indirectly due to vascular changes. Circumscribed peripheral arteriosclerosis is not infrequently an early indication of a later occurring general arteriosclerosis. ZIMMER.

### ALIMENTARY TRACT

**Determination of Gastric Acidity**—L. MICHAELIS and H. DAVIDSOHN, *Zeitschr. f. experimentelle Pathologie u. Therapie*, Vol. VIII, No. 2.

The determination of the proteolytic activity of gastric juice depends upon the determination of its true acidity, viz., of its concentration of hydrogen ions. The concentration of the hydrogen ions is the sole criterion of the acid degree of a liquid. The ordinarily employed methods of titration do not give results pointing to the true acidity of a fluid. The optimum of pepsin digestion is obtained in the presence of a concentration of hydrogen ions of 0.016 n. A distinct destruction of pepsin by the acid ensues when the acidity is 0.03 and more; pepsin activity is entirely inhibited when the acid degree is 0.0014 n. The acidity of the gastric juice should be considered according to these figures. WESTERN.

**Acute Gastric Atony**—A. SCHLESINGER, *Berliner klin. Wochenschr.*, March 20, 1911.

The clinical picture of gastric atony is interesting to both the surgeon and the internist. Although the majority of cases occur in the wake of operations, acute gastric atony has also been observed after dietary excesses, after exertion, and during the stages of convalescence of typhoid and scarlatina. Of the 3 grave cases of the author but one ensued after an operation. He does not believe that ileoduodenal obstruction is the cause of the affection, but maintains that acute gastric atony is, as a rule, a primary condition. MILL.

**Phenolphthalein Test for Hemorrhage of the Gastrointestinal Tract**—I. BOAS, *Deutsche med. Wochenschr.*, Jan. 12, 1911.

No meat should be eaten for a few days before the test is applied. The reagent is made by dissolving one gram of phenolphthalein and 25 grams of KOH in 100 grams of water and adding 10 grams of powdered zinc. This red solution is stirred and heated until the red color entirely disappears, and is then filtered. The test is executed as follows: a little stool is stirred with water, a few drops of acetic acid added, then ether and the whole gently mixed. The ether is decanted and 20 drops of the phenolphthalein mixture added, then shaken and 3 or 4 drops of hydrogen peroxide added. In the presence of blood the mixture turns pink. MILL.

**Meiostagmin and Hemolytic Tests in Gastrointestinal Carcinoma—G. KELLING, Wiener klin. Wochenschr., Jan. 19, 1911.**

Out of 45 patients with cancer 47 per cent. gave a positive reaction with the meiostagmin test, in many cases before a mass was palpable. Thirty of the patients showed a positive reaction with the hemolytic test. Eight cases were negative with both tests. MILL.

**The Glycyltryptophan Test in the Diagnosis of Gastric Carcinoma—O. NEUBAUER and H. FISCHER, Münchener med. Wochenschr., March 28, 1911.**

Normal gastric juice does not split up glycyltryptophan. The stomach contents of positively existing carcinoma almost always give a positive reaction. Other gastric affections were, as a rule, negative. MILL.

**Gastric Spasm—R. WALDVOGEL, Münchener med. Wochenschr., Jan. 10, 1911.**

The patient takes 4 grams sodium carbonate and 4 grams tartaric acid each in 100 c.c. of water. This is given 2 hours after breakfast or 4 hours after dinner. Patient then lies down. Spasm is considered to be present if the lower margin of the stomach is found by percussion to reach about a hand's breadth above the umbilicus. In addition there is an eructation of air without odor or taste, and the patient complains of gastric distress. The condition is called forth by lead poisoning, abuse of tobacco, arteriosclerosis, and chiefly neurasthenia. MILL.

**X-Ray Appearances in Certain Cases of Hour-Glass Stomach—C. T. HOLLAND, Archives of the Röntgen Ray (London), April, 1911.**

X-ray examinations of a suspected case of hour-glass stomach must be made in a standing position. The food should be administered slowly and watched on the screen as it enters and fills up the stomach. The shadow shows a small Magenblase, the cardiac end full of food, and the food shadow gradually narrowing to a point just above and to the left of the diaphragm. The patient is then kept waiting for about 10 to 15 minutes, and then the upper shadow can be seen to be smaller than on the first examination, the lower compartment of the stomach fills up and shows good contraction and the usual pyloric-end formation; while a narrow curved line of the stream of the bismuth food joining the two shadows can be plainly seen. SACHS.

**The Einhorn Duodenal Bucket and a Modified Thread Test—W. G. MORGAN, Am. Jour. Med. Sci., May, 1911.**

Author employed Einhorn's duodenal bucket and the thread impregnation test which assist in the diagnosis and location of peptic

ulcer. He devised the following modification of the bucket. A split BB shot is fastened to the end of a No. 8 braided silk thread. The shot is enclosed in a 5-grain capsule, the cord passing through a small hole in one end; 75 cm. from the capsule a knot is made. The manner of using the duodenal shot is the same as that for the bucket. For several hours before beginning the test, medicines which may discolor the thread are discontinued, and for supper no meat should be allowed; the meal should preferably consist of milk, eggs, bread, and butter. At bedtime the patient swallows the capsule and thread until the knot is at the teeth. The end of the string is then made into a loop and fastened to the nightgown with a safety pin, so that the knot just remains in place. The shot remains down all night, in the meantime passing through the pylorus. On awakening, the patient pulls the thread out and hangs it up to dry, being careful not to allow anything to touch it while wet. Inspection of the dried thread shows the lower end bile stained where it has remained in the duodenum, and if blood is present it is indicated by a reddish-brown discoloration. The principal advantage of the shot over the bucket lies in its cheapness. Any number of the tests may be carried on at one time, whereas the physician usually possesses one bucket set. Somewhat more ease is experienced in swallowing the smaller capsule, and the removal is decidedly facilitated. There is no obstruction whatever felt in drawing up the small shot; it is not even necessary to swallow when the base of the tongue is reached. But the shot has the disadvantage of not being hollow, and we cannot, therefore, obtain any of the fluid to determine whether or not in a doubtful case the end of the thread entered the duodenum. Another disadvantage is that by means of the bucket we can determine whether or not the pylorus is normally permeable. Author concludes that the thread test, whether performed with the Einhorn bucket or the duodenal shot, is of undoubted assistance in the diagnosis of peptic ulcer. WESTERN.

**Diagnosis of Duodenal Ulcer**—W. F. CHENEY, *Am. Jour. Med. Sci.*, March, 1911.

Recognition of duodenal ulcer depends largely on the clinical history; too much time cannot be spent in carefully working this out in all its details. The important points about which the patient must be questioned are these: the length of time during which the attacks have recurred; their frequency; the patient's condition in the interval; the effect they have had upon nutrition; regarding the attacks themselves, we must inquire the site of pain, its radiation from that site, its intensity, its character, the time at which it comes on, its duration, what gives relief, what other symptoms accompany it. The story elicited by such a plan of questioning is

usually quite characteristic; so characteristic in fact, that Moynihan says it is diagnostic and justifies operation even without physical examination. Traced by such a systematic interrogation, the patient's history in duodenal ulcer is that these attacks of pain have recurred for years past, sometimes ten or fifteen, sometimes as far back as he can remember. An attack may supervene but once a year or once in several months; or for a time attacks may recur every few weeks or even every day, and then there may be no more for many weeks. In the interval between attacks patients with uncomplicated duodenal ulcer usually feel perfectly well; in other cases there is complaint of persistent acid dyspepsia, heart burn, regurgitation of mouthfuls of sour water at the height of digestion, flatulence and belching. But serious disturbance of digestion, with nausea and vomiting, usually means some complicating condition or some different disease, and is not a part of the ordinary clinical picture. The article should be read in the original. WESTERN.

**Improved Diagnosis of Cancer of the Large Intestine—A. E. BARKER,**  
Practitioner (London), Feb., 1911.

The following points are of most aid in the diagnosis of cancer of the large intestine. When any patient after middle age complains of occasional colicky pains across the abdomen, increasing in frequency and severity, and generally focusing themselves ultimately at one particular spot, the case calls for careful examination before any purgative is given. The examination should be all the more careful if there be a history of intermittent constipation with alternate hard and loose motions. If such evacuations are accompanied by slime and blood the suspicion of a growth somewhere in the large bowel will be strong, even though there be none of the other symptoms of obstruction, such as distension and tormina, with occasional vomiting. Sigmoidoscopy and radioscopy, the latter combined with bismuth meals, are valuable aids to diagnosis. SACHS.

**Functional Examination of the Liver—K. GLAESSNER,** Wiener med. Wochenschr., Feb. 20, 1911.

A mixture of phosphotungstic acid and hydrochloric acid is added to an equal amount of urine (50 c.c.). The precipitate, containing uric acid, xanthin bases and creatin or creatinin, is filtered off. In 10 c.c. of the filtrate the nitrogen is then determined according to Kjeldahl. The filtrate is evaporated to dryness on the water bath, and then extracted for 6 hours with 50 c.c. ethyl alcohol-amylic alcohol. The ethyl-amylic alcohol is then filtered off, the residue washed with the same mixture, and the filtrate (10 c.c.) submitted to N determination. The difference between the two nitrogen values

corresponds to the amino acid nitrogen. Inasmuch as the normal liver converts the amino acids into urea, the demonstration of these acids points to a functional disturbance of the liver. MILL.

**A Venous Hum in the Epigastrium in Cirrhosis of the Liver**—W. S. THAYER, *Am. Jour. Med. Sci.*, March, 1911.

A venous hum accompanied occasionally by a well-marked thrill may be detected in the epigastrium in some instances of hepatic cirrhosis. The thrill and murmur may be appreciable directly over the extensive cutaneous varicosities, or in instances where there is little or no external evidence of venous engorgement. In most of the cases where an epigastric venous hum has been heard in cirrhosis, in the absence of cutaneous varicosities, the sound has been audible best about the umbilicus and along the median line in the epigastrium, i.e., along the course of the round ligament. These murmurs should be distinguished from the slight venous hum sometimes heard in anemic subjects just above and to the right of the umbilicus, over the inferior vena cava—murmurs which may be brought out by pressure in thin individuals. A well-marked thrill and an intense venous hum may be heard in hepatic cirrhosis over a limited area in the epigastric notch, in the immediate neighborhood of the xyphoid cartilage, at a point so far above the lower border of the enlarged liver that it cannot depend upon currents in a varicose umbilical or parumbilical vein. WESTERN.

**Leucocytosis and Neutrophile Blood-Picture in Appendicitis**—H. KOHL, *Mitteilungen a.d. Grenzgebieten d. Med. u. Chir.*, Vol. XXII, No. 4.

The Arneth blood-picture denotes virulence of infection, the leucocytosis indicates peritoneal irritation and reaction on the part of the patient. Operation is indicated if there is a considerable leucocytosis even in the presence of mild clinical symptoms. If there is a normal or nearly normal blood-picture in a case showing severe symptoms, operation is indicated, as the inflammation in such cases is usually extraperitoneal. STEIN.

**Determination of Blood Viscosity in Surgical Diseases of the Abdomen**—L. SIMON, *Bruns' Beiträge z. klin. Chirurgie*, Vol. LXXII, No. 1.

The more advanced the peritoneal infection the more pronounced is the increase of blood viscosity. It is highest in diffuse peritonitis. The viscosity does not announce the anatomical condition of the diseased appendix, but it serves as an important diagnostic means as it points to the involvement of the peritoneum. A low viscosity in peritonitis is therefore more favorable prognostically than one of a higher degree. The viscosity in peritoneal af-

fections starting from the uterine adnexa is lower than in other types of peritonitis; the determination of the viscosity may therefore become of import in differential diagnosis. In the diagnosis of internal hemorrhage the determination of the blood viscosity may be especially valuable as in acute hemorrhages the viscosity becomes diminished on account of the loss of red blood cells. The determinations can be readily executed by the general practitioner. STEIN.

**Acute Emergencies of Abdominal Disease**—B. G. A. MOYNIHAN, *British Med. Jour.*, April 1, 1911.

The occurrence of a certain attack of intolerable agony in the abdomen associated with tense rigidity of all the abdominal muscles indicates that there is an acute tension in the abdomen which needs immediate surgical attention. Shock is not a symptom of perforation, for in the early hours after this disaster has occurred the pulse is very little altered in volume or rate. SACHS.

**Dyspepsia of the Appendix**—H. G. WATSON, *Internat. Jour. of Surgery*, March, 1911.

To the general practitioner dyspepsia should mean first of all, appendicitis, gall bladder disease, cirrhosis of the liver or some intestinal trouble and last of all disease of the stomach. The type of dyspepsia due to the appendix is found in conditions of hyperacidity and hypersecretion of the stomach. The Mayos attracted the author's attention to this subject. Fenwick calls attention to the appendix as a cause of dyspepsia in 112 cases of diseases of the stomach. Dyspepsia was due to the appendix alone in 22 cases; to the appendix and gastric ulcer combined in 5 cases; to the appendix and duodenal ulcer coexisting in 4 cases. Author reports two pertaining cases. First case: man, 37 years old, was operated on for appendicitis in October 1903; again operated on in July 1907 for supposed adhesions; again on December 22, 1907 for suspected gall bladder disease. However, an ulcer of the stomach was found which proved to be the cause of the trouble. His symptoms were for the past nine years cramps in the stomach, coming on about 2 hours after meals, radiating to the left; usually awakened at about 1 o'clock in the morning with pain in the stomach and regurgitating fluid. This case illustrates the too frequent mistake made in diagnosis of disease of the gastrointestinal tract and the seeming eagerness to remove the appendix. Second case: a clear case of dyspepsia of the appendix in a man, 31 years old. Patient had habitual vomiting spells early in the mornings. Test breakfast showed hypermotility and hyperacidity. He did not improve much under treatment and, finally, six months after the dyspepsia began, pain supervened in the intestines for the first time. The appendix was found to be

large and swollen in the middle. Temperature and pulse were normal. Patient was operated upon and the appendix burst at time of operation excreting a little pus and a concretion. Since then he has been well. His symptoms during this time were nausea; pressure in the stomach and attacks of vomiting about four hours after eating. The vomit contained no food remnants. WESTERN.

**Diagnosis of Gall Stone Disease**—H. KEHR, *Münchener med. Wochenschr.*, March 21, 1911.

Are gall stones present? A positive diagnosis of the presence of gall stones is possible but in very few instances. If but the Röntgen rays could penetrate the darkness. However, as every physician knows, this method is almost entirely useless and author has not employed it for this purpose for a long time. If gall stones are passed per rectum or if they are vomited then the diagnosis is definite. In the great majority of cases, however, the concretions do not pass the neck of the gall bladder; the passing of the stones, notwithstanding its frequent occurrence, is relatively rare if compared with the great frequency of gall stone disease. (The article abounds in points connected with the diagnosis of gall stone disease; the author has examined about 4000 cases of the affection and he speaks from real experience. His contribution should be studied in the original.) MILL.

**Nucleus Test of Schmidt**—N. VAN WESTENRIJK, *Zeitschr. f. experimentelle Pathologie u. Therapie*, Vol. VIII, No. 2.

The nucleus test as advocated and employed by Schmidt is of no diagnostic value, as many healthy individuals, according to this test, would suffer from pancreatic disease. Deficient pancreatic activity can only be then assumed when the marbles of beef reappear unaltered or but microscopically diminished in the feces; this may be the case in achylia gastrica. In individuals with normal gastric secretion the diminutive gauze bags containing the beef marbles should be administered in keratin capsules. If this be done the test would be of the same import as in achylia gastrica. WESTERN.

**Chronic Pancreatitis**—J. B. DEEVER, *Jour. A. M. A.*, April 15, 1911.

There are no pathognomonic symptoms, no short cuts to the diagnosis of chronic pancreatitis. It is to be made only by the solution of an equation, the factors of which are obtained by three separate lines of inquiry, viz.: (1) the anamnesis; (2) the physical examination; (3) the special tests designed to show disturbances of pancreatic function. Author has divided his cases into two groups, according to the presence or absence of gall stones. Of 73 cases,



in 35 there were stones in some portion of the biliary passages, and in 38 there were none at the time of operation. The leading and most constant symptom is pain, which was absent in only 3 of the author's cases. The pain of chronic pancreatitis, or its mild exacerbations, is not in itself characteristic. It varies from dull discomfort or ache to sharp lancinating or colicky pain quite like gall stone colic. It may be merely a sense of fulness or oppression in the epigastrium. The pain was severe in 12 cases; moderate in 21; in 11 it was colicky. In the majority of cases when the pain was colicky in type the gall bladder was diseased. No definite relation to eating or to any particular articles of food was brought out in the author's series. But slightly less frequent than pain is the history of nausea or vomiting or both. The third important symptom is jaundice. Loss of weight was noted in 21 cases. In most instances fever was known to have been present and in 5 a history of chills and sweating was obtained. The bowels, as a rule, are constipated. The physical examination rarely affords much positive evidence. It is of more value in excluding other abdominal conditions.

WESTERN.

**Cysts of the Pancreas**—R. B. HALL, N. Y. Med. Jour., Feb. 11, 1911.

Report of an interesting case of a cyst of the pancreas. The diagnosis of pancreatic cyst is more or less obscure and it is difficult in many cases even after the operation. To confirm the diagnosis, it is necessary, in many cases, to examine the character of the fluid, which, if it is of the pancreas, will reveal the true nature of the cyst. Tumors in the abdomen displace neighboring organs, or became attached to them, thus misleading the operator in his judgment, but, if the contents of the cyst demonstrate the presence of pancreatic fluid, and the anatomical relations are those of a pancreatic cyst, little doubt should remain as to its nature. In a large number of reported cases there is a history more or less definite of an abdominal injury. In many cases the enlargement is observed soon after the injury; in others, after a long period of time has elapsed. In other instances the development of the cyst follows some acute illness, such as typhoid fever. The usual course of pancreatic cyst is comparatively acute, a few weeks covering the entire history, but there are a few instances on record in which the cyst has been known to exist for years without causing much inconvenience until some accident to the cyst like hemorrhage or rupture of the sac, or intestinal obstruction brings the case to a sudden termination.

WESTERN.

**Subphrenic Abscess**—H. ROTH, N. Y. Med. Jour., Feb. 18, 1911.

In the diagnosis of subphrenic abscess a history of preceding intraabdominal or pelvic lesions is of paramount importance. In

the absence of such a history a diagnosis is very difficult. If the patient is seen in an advanced stage of the disease, when a painful bulging area is found in the epigastric, hypochondriac, or lumbar regions, the diagnosis is readily made. But the diagnosis should be made as early as possible and before thoracic or any other complications have developed. All means of diagnosis should be exhausted, including the X-rays, which might demonstrate a marked elevation of the paralyzed diaphragm. The most important conditions from which a subphrenic abscess must be differentiated, are pleuritic exudates, which so frequently complicate the disease. The history of a preceding pneumonia favors pleurisy, empyema, abscess of the lung or pyopneumothorax rather than a subphrenic abscess. The presence of gas produces three different zones on percussion and readily suggests subphrenic abscess with a complicating pleuritic exudate. Aspiration of clear serum from a patient who is septic points rather to subphrenic abscess than to pleurisy with effusion. If a complicating empyema contains fetid pus, only an operation may determine the presence of the subphrenic abscess. The presence in the aspirated pus of bile, contents of the alimentary canal, liver cells, echinococci, favors a diagnosis of subphrenic abscess. The presence of the colon bacillus is also suggestive. A subphrenic abscess situated low down in the anterior part of the chest may simulate abscess of the liver, hydatids, or cholecystitis. A retroperitoneal subphrenic abscess is to be differentiated from a primary perinephritic abscess or tumor of the kidney; here again, the history is of decided value.

WESTERN.

**Septicemia Hemorrhagica**—W. J. SPENCER, *Clinical Jour.* (London), Jan. 4, 1911.

Hemorrhages into the stomach and intestine due to small ulcers or erosions may develop after an operation which is usually abdominal. In 80 per cent. of these cases a severe septic infection with secondary anemia is present before the operation, the latter in itself having no direct influence on the hemorrhage. Similar lesions of the stomach and duodenum are found in certain cases of disease in which no operation has been performed. Of these cases 80 per cent. are septic in nature. Such hemorrhage is of very great significance, though a few patients recover from it.

SACHS.

**Chylous and Pseudo-Chylous Ascites**—R. L. M. WALLIS and H. A. CHÖLBERG, *Quarterly Jour. of Medicine*, Jan., 1911.

Two main types of milky ascites may be recognized, chylous and pseudo-chylous. The occurrence of a milky ascites is characteristic of no specific morbid anatomical lesion. The prognosis in

milky ascites is very grave. The mortality in pseudo-chylous ascites is higher (70.4 per cent.) than in chylous ascites (66 per cent.). A complete chemical and physical examination is necessary to differentiate with certainty the two types of milk ascites. SACHS.

**Banti's Disease**—K. UNGAR, Wiener klin. Wochenschr., March 9, 1911.

Report of 3 cases of Banti's disease. Banti's disease is an affection sui generis the primary cause of which is situated in the gastrointestinal tract. Neither syphilis, nor tuberculosis nor alcoholism play an important rôle in the etiology of the disease. The ascitic state may last more than a year. MILL.

**Hernia of the Linea Alba**—L. MÜLLER, Centralblatt f. die Grenzgebiete d. Med. u. Chir., Vol. XIII, No. 23.

Patient should be examined in the erect posture, as the hernia will escape detection in the reclining position. History usually elicits that the patient has done much bending backward and forward, has carried heavy weights or has done some work tending to weaken the upper abdominal wall. The condition must be differentiated from gastric ulcer. The symptoms are more intense after physical effort, while in ulcer the discomfort follows the intake of food. The relief in hernia is obtained by patient lying on the back, in ulcer often by patient lying on the right side. Tenderness in ulcer is more localized. Ulcer occurs more often in anemic girls, while hernia is seen more frequently in robust men. Gall bladder conditions, appendicitis, enteroptosis and retroflexion of the uterus must also be differentiated. STEIN.

**Coincidence of Volvulus and Real or Simulated Strangulated Hernia**—R. T. MILLER, Annals of Surgery, Feb., 1911.

The diagnosis is very difficult, though there are certain suggestive features: advanced age, a hernia of long standing, shock out of proportion to the hernia, marked abdominal tenderness, and sometimes the presence of a palpable mass. STEIN.

**Retroperitoneal and Mesenteric Cysts of a Simple Nature**—G. H. MAKINS, Annals of Surgery, March, 1911.

The diagnosis must usually be made by exclusion. Hydatid cysts may be excluded by an absence of eosinophilia. Pancreatic cysts are usually situated higher in the abdomen, are less movable, more frequently accompanied by gastric disturbances, and glycosuria may be present. There may also be evidence of defective pancreatic digestion as shown by examination of the stools. Sarcomatous cysts show a more rapid growth and pain is an early and prominent symp-

tom. Ovarian cysts show an anchorage in the pelvis, as determined by vaginal or rectal examination. Retroperitoneal cysts may be displaced up higher in the abdomen, and elevation of the pelvis will also displace them. Kidney and gall bladder conditions can usually be excluded by their history and symptoms. STEIN.

## NERVOUS SYSTEM

**Traumatic Myelitis**—W. B. WARRINGTON, *Med. Chronicle* (London), March, 1911.

The existence of traumatic myelitis has been proved. It is rare as a clinical state, but a knowledge of its existence should act as a caution in making a diagnosis of a purely functional disturbance after injury to the back. In cases of traumatic myelitis, although after the injury little or no disturbance of the function of the cord is observed, within some time, varying from days to a few months, symptoms of paresis, slight disturbance of the bladder functions and of sensation appear. These symptoms may proceed a marked spastic or spastic-ataxic paraplegia. These cases do not resemble the well-defined system-diseases on the one hand or disseminated sclerosis on the other, and in their mode of onset and in their clinical signs, they differ from hematomyelia. Pathologically, degenerations, neuroglia proliferation and local scar or cavity formation are present. SACHS.

**Biot's Breathing**—L. A. CONNER, *Am. Jour. Med. Sci.*, March, 1911.

Biot's breathing has been supposed to occur not only in meningitis, but in other cerebral conditions as well. It is sometimes referred to as "cerebral breathing." Biot's breathing was noticed in about 20 per cent. of cases of meningitis which came under author's observation. The characteristic features of Biot's breathing are, periods of apnea, which vary in length and occur at irregular intervals; constant irregularity in rhythm, and in the force of the individual respirations; frequent occurrence of deep sighs; great uniformity of the expiratory level. WESTERN.

**Argyll Robertson Sign in Cerebral and Spinal Syphilis**—J. M. CLARKE, *British Med. Jour.*, Feb. 11, 1911.

Author analyzed with regard to the Argyll Robertson sign 48 cases of syphilis of the brain and 21 cases of syphilis of the cord. In the 48 cases of cerebral syphilis the Argyll Robertson pupil was present in 2 cases. In one case the patient, a man 32 years old, had symptoms which were suggestive of an early stage of general

paralysis. The other case, a woman 45 years old, who for 5 years had a right hemiplegia of syphilitic origin and an Argyll Robertson pupil, later developed a typical tabes dorsalis. Of the 21 spinal cases, the Argyll Robertson pupil was present in 2 cases. It is interesting to note that these 2 cases of syphilis of the cord presenting this sign belong to the clinical group of syphilitic spastic paraplegia first described by Erb.

SACHS.

**Periodical Fluctuation of the Brain Function**—G. STERTZ, *Archiv f. Psychiatrie u. Nervenkrankheiten*, Vol. XLVIII, No. 1.

Description of a series of peculiar conditions of periodical fluctuation of the brain function. The cases were characterized by periodical disturbances of consciousness; following a phase of comparative consciousness there ensued in regular periods one of mental cloudiness. It seems justified to consider the intermittent disturbances of consciousness as acute manifestations of the arteriosclerotic degeneration.

WESTERN.

**Blood Pressure in Delirium Tremens**—F. WOHLWILL, *Archiv f. Psychiatrie u. Nervenkrankheiten*, Vol. XLVIII, No. 1.

In 30 cases of uncomplicated alcohol delirium the systolic and diastolic pressures were ascertained according to v. Recklinghausen's oscillatory method. In the beginning of the delirium, in mild and moderately severe cases during the entire course, the systolic as well as the diastolic blood pressure, pulse pressure and the product of amplitude frequency are increased; the blood pressure quotient does not, as a rule, deviate from the normal. In late stages of grave delirium tremens there occurs often an abrupt decline of pulse pressure, blood pressure quotient and amplitude frequency product. During convalescence blood pressure is very fluctuating. The blood pressure in delirium tremens has no prognostic significance.

WESTERN.

**The Wassermann Reaction in Imbeciles**—THOMSEN, BOAS, HJORTH and LESCHLY, *Hospitaltidende*, 1911, No. 7.

Of the 2061 inmates of the Danish institutions for imbeciles 31 (1.5 per cent.) showed positive Wassermann reaction. In 5 cases the infection occurred so late that it could not stand in causative connection to the imbecility. In the other cases there was congenital or very early acquired syphilis. In 6 instances with negative reactions congenital syphilis had probably also existed. Most of those with positive reactions were from 5 to 10 years old. The total results of the investigation do not point to syphilis as a dominant etiologic factor in the production of imbecility.

TESSEN.

**Psychopathology of Suicide**—SICHEL, *Deutsche med. Wochenschr.*, March 9, 1911.

Nearly all instances of suicide occur on a psychopathological basis. Characteristic for hysteria is the theatrical, for epilepsy the brutale execution of the suicidal intent. Other psychoses predisposing to suicide are alcoholism, paranoia, manic-depressive insanity and senile melancholia. Suicide of a relative acts as a psychic infection.

MILL.

## URINARY ORGANS—MALE GENITALIA

**Value of Phenolsulphonephthalein in Estimating the Functional Efficiency of the Kidneys**—C. GOODMAN and L. KRISTELLER, *Surg., Gyn. and Obstetrics*, Jan., 1911.

Authors claim the following advantages in the use of phenol-sulphonephthalein in estimating renal function: the drug does not readily decompose in solution and can be boiled. Only a small dose is required, 1 c.c. of the solution containing 0.006 gram of the dye. The injection is painless. The drug is excreted entirely by the kidney, and can be demonstrated in the urine in from 3 to 10 minutes after the subcutaneous injection. The drug lends itself to accurate colorimetric measurement which is not interfered with by the presence of pus, phosphates, bile and indican.

STEIN.

**Diagnostic Value of Luys' Segregator**—R. A. STONEY, *Dublin Jour. of Med. Science*, April, 1911.

The separation of the urine from the two kidneys by means of Luys' segregator when properly employed is perfect. The results of separation of the urine from either side by means of an inter-vesical segregator are in many cases superior to those obtained by catheterization of the ureters. Luys claims the following six advantages for his method of separation of the urine, (1) it is easier than ureteral catheterization, (2) it is absolutely exempt from the danger of contaminating a healthy kidney by a ureteral catheter which has passed through an infected area, (3) segregation by this method does not disturb the functions of the kidneys or if it does it affects the two kidneys equally, (4) intravesical segregation alone permits a knowledge of how a kidney empties itself, (5) the intravesical separation furnishes the total amount of urine secreted by each kidney, (6) finally in children ureteral catheterization is usually impossible, but a small-sized segregator (No. 15 F.) can generally be passed and gives perfect results.

SACHS.

**Kidney Pain**—E. H. FENWICK, *British Med. Jour.*, Jan. 7, 1911.

The kidney is sensitive in only two areas, namely, the pelvis and the neighborhood of the true capsule. Sometimes patients do not have sensation in either area, and then progressive disease of the kidney may be painless from start to finish. The commonest cause of kidney pain is dilatation of the renal pelvis. SACHS.

**Inflammation of the Fatty Capsule of the Kidney**—W. BUSSENTUS and C. RAMMSTEDT, *Mitteilungen a.d. Grenzgebieten d. Med. u. Chirurgie*, Vol. XXII, No. 3.

Authors state that this condition usually results from contusions, riding horses, lifting weights, etc. The onset is generally abrupt with a chill and high fever; the temperature shows marked remissions for a few days. Sweats may occur. Sudden pain is usually felt just below the kidney radiating to the stomach, bladder, cecum or genitals. Deep breathing and moving the trunk increase the pain. Tenderness is elicited just below the twelfth rib. The lumbar region usually shows some swelling. STEIN.

**Carcinoma, originating in the Suprarenal Medulla in Children**—R. FREW, *Quarterly Jour. of Medicine*, Jan., 1911.

Carcinoma of the suprarenal medulla spreads by the lymphatic system and gives rise to different appearances according as the left or right suprarenal medulla is primarily affected. The diagnosis is not usually made until secondary growths have occurred. When the left suprarenal is affected, secondary deposits occur in the liver, in the ribs, in cranial bones, in the thoracic duct and in certain of its tributaries. When the right side is affected, secondary deposits are found on the upper surface of the liver, in both lungs, in a few cases in the cranial bones, in the right lymphatic trunk and certain of its tributaries. SACHS.

**Coli Infection of the Urinary Tract**—C. FRANKE, *Mitteilungen a.d. Grenzgebieten d. Medizin u. Chirurgie*, Vol. XXII, No. 3.

Author has demonstrated a lymphatic connection between the ascending colon and cecum on the one side and the right kidney on the other. The lymphatic connection between the intestine and left kidney has not as yet been shown. The lymphatic connection explains to a certain degree the greater frequency of right-sided pyelitis. Even if the intestinal function is but slightly disturbed bacteria enter readily the lymph vessels. STEIN.

**Uremia**—OBERMAYER and POPPER, *Zeitschr. f. klin. Med.*, Vol. LXXII, Nos. 3 and 4.

In most uremic sera indican occurs in larger or smaller amounts. This occurrence is characteristic for uremia; indican is not found in normal or other pathological sera. The presence of other aromatic substances in uremic serum may be determined by the sense of smell, by Millon's reaction and the precipitation with bromine water. In the great majority of cases of uremia occurs augmentation of molecular concentration and N. retention. A thorough examination will reveal retention of urinary components in every instance of uremia. Uremia is an intoxication called forth by the retention of urinary constituents or insufficient elimination of metabolic products. It cannot be decided whether the condition is set up by the same substances in every instance. The discrepant clinical picture, and the changeable excreting qualities of the diseased kidneys for various substances in every individual case rather point to various substances as the etiological factors of the uremic state.

WESTERN.

#### FEMALE ORGANS OF GENERATION—PREGNANCY— PARTURITION—INFANTS

**Ammonia, Amino Acids and Peptid Nitrogen in the Urine of the Pregnant**—F. FALK and O. HESKY, *Zeitschr. f. klin. Med.*, Vol. LXXI, Nos. 3 to 6.

Authors demonstrated that during gravidity there ensued a rather constant deviation from the normal of the composition of the nitrogenous urinary substances. This deviation is shown by the relative increase of ammonia and nitrogen combined with amino acids and peptids. Amino acid nitrogen is increased in about 73 per cent., peptid nitrogen in 76 per cent. of the cases; this increase amounts to twice or three times the ordinary values. After delivery the amount of ammonia or that of amino acid nitrogen remains undisturbed, while peptid nitrogen is decreased below the normal quantity. In the urine of eclamptic women shortly after delivery the peptid nitrogen excretion is often still markedly augmented and declines but very gradually. Alimentary levulosuria and increased peptid nitrogen excretion run mostly a parallel course during pregnancy. The increase of amino acid nitrogen is due to a hepatic disturbance ensuing during gestation; the increase of peptid nitrogen is presumably caused by the augmented excretion of aromatic and hydroaromatic acids paired with glyocol.

WESTERN.



**Röntgen Rays in the Diagnosis of Pregnancy**—L. EDLING, Münchener med. Wochenschr., March 15, 1911.

In the beginning of the third month of pregnancy already, and probably even earlier, sufficiently clear skiagraphs of the fetus may be obtained. The fetus may also be recognized in the Röntgen picture in extrauterine pregnancy. MILL.

**Import of Cystoscopy in the Diagnosis of Pyelitis during Pregnancy**—CALMANN, Deutsche med. Wochenschr., March 23, 1911.

By the employment of cystoscopy instances of pyelitis occurring during pregnancy may be definitely recognized, and differentiated from appendicitis and cholecystitis. Although the affection is mostly localized in the right side, synchronous disease in the left side may also occur. The article contains a detailed description of 4 per-  
taining cases. MILL.

**Urologic-Gynecologic Observations**—MIRABEAU, Monatsschr. f. Geburtshilfe u. Gynäkologie, Feb., 1911.

Vomiting setting in in the latter half of pregnancy is frequently an early symptom of gravidity-pyelitis. The urine of such cases hardly exhibits any leucocytes; bacteriuria, however, is present. The earliest symptom of renal tuberculosis is a gnawing pain at the side below the arch of the ribs. The diagnosis of the affection at some later date may frequently be made by palpating the thickened pelvic portion of the ureter. A number of instances of dysmenorrhea is due to intermittent hydronephrosis. The latter originates from obstruction of the pelvic portion of the ureter; this obstruction is called forth by disease processes in the genital organs. MILL.

**Blood Viscosity in the Healthy and Diseased Nursling**—F. LUST, Archiv f. Kinderheilkunde, Vol. LIV, Nos. 1-3.

The average blood viscosity of the healthy nursling is about 3.8. Anemic nurslings usually exhibit a low viscosity degree; still there is no constant ratio between the viscosity and the hemoglobin contents. In all conditions accompanied by cyanosis the blood viscosity is increased on account of accumulation of carbon dioxide. Viscosity and blood-water are in inverse, but not constant, proportion. The viscosity is influenced by a physiological solution of sodium chlorid. In exudative diathesis the viscosity is slightly diminished; chronic and acute nutritive disturbances do not per se cause alteration of viscosity, but this will ensue when there is great loss of water in the tissues when it may be augmented up to 100 per cent. MILL.

**Pyelonephritis in Nurslings**—LAMALLE, *Le Scalpel*, Feb. 5, 1911.

Pyelonephritis is not a very frequent affection in nurslings; it may occur as a complication of grave systemic infections, but it may bear an ascending character and be due to cystitis or vulvitis. More frequent is pyelonephritis in the course of gastroenteritis of nurslings. In these cases it appears as a complication of colisepticemia. Author reports two cases of this type. If cystitis is present pyelonephritis may be primary or secondary; in the latter instance we have to deal with ascending infection or the infection was transmitted from the intestine through the lymph channels. The greater frequency of pyelonephritis in little girls points to the urethra as the portal of infection. The main symptoms of pyelonephritis in nurslings are, intermittent fever, accompanied sometimes by chills and sweats, and a turbid condition of the urine which continues after sedimentation has taken place. Freshly voided the urine exhibits an acid reaction; its microscopical examination shows the presence of leucocytes, a small number of epithelia, microorganisms, especially coli bacilli, and occasionally casts. Among the other symptoms may be enumerated, edemas, enlargement and sensitiveness of the kidney, and phenomena pointing to a mild uremic intoxication. The prognosis is comparatively favorable; in undernourished infants the prognosis is rather doubtful.

ZIMMER.

**Ephemeroes Traumatic Glycosuria in the New-Born**—HOENIGER, *Deutsche med. Wochenschr.*, March 16, 1911.

In four children delivered by operative interference the urine showed for a few days traces of sugar, even as much as 0.15 per cent. This symptom was not noticed in children delivered after prolonged labor and with marked swelling of the head. The glycosuria in these instances appears therefore to be a manifestation of a suddenly occurring injury to the head.

MILL.

### **Bibliography**

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**DIAGNOSTIC AND THERAPEUTIC TECHNIC.** A Manual of Practical Procedures Employed in Diagnosis and Treatment. By ALBERT S. MORROW, A.B., M.D., Adjunct Professor of Surgery in the New York Polyclinic; Attending Surgeon to the Workhouse Hospital, and to the New York City Home for the Aged and Infirm. With 815 Illustrations, mostly Original. Philadelphia and London, W. B. Saunders Company, 1911.

This is a praiseworthy attempt to bring together in one volume the most essential diagnostic and therapeutic technic procedures. There are a few such books in the German language; none, however, as far as we know, has ever appeared on this side of the Atlantic. The book, of course, abounds in elementary instruction, but the information it imparts is usually only acquired after years of practical work at the bedside and the consultation of numerous works pertaining to the various special fields in medicine and surgery. It has been the author's endeavor to minutely explain each technic procedure; with the aid of the generally well selected and adequate illustrations, of which there are 815, he has admirably succeeded in the undertaking.

We are glad to be able to recommend this book to our readers.  
H. S.

**A MANUAL OF PHYSICAL DIAGNOSIS.** By BREFNEY ROLPH O'REILLY, M.D., C.M., Demonstrator in Clinical Medicine and in Pathology, University of Toronto; Assistant Physician to St. Michael's Hospital, Toronto; Physician to Toronto Hospital for Incurables. With 6 Plates and 49 other Illustrations. Philadelphia, P. Blakiston's Son & Co., 1911.

A very useful little book, offering nothing new, it is true, but arranged in a rather logical and immensely practical manner. While the larger works on this subject serve more for reference and consultation, a small volume like the one before us, is an ever-ready guide for the practical examination of the patient.  
H. S.

**VICIOUS CIRCLES IN DISEASE.** By JAMIESON B. HURRY, M.A., M.D., Ex-President, Reading Pathological Society. With Illustrations. Philadelphia, P. Blakiston's Son & Co., 1911.

Vicious circles (by which is understood morbid processes in which two or more disorders are so correlated that they act and

react reciprocally on each other) very likely play an important part in a number of pathological states. It was the author's object to array systematically the manifold vicious circles that they may be better recognized and studied by the medical profession. Considering that this is a first attempt in dealing in a systematic way with this subject, one must confess that the author has discharged his task in a highly satisfactory manner. H. S.

**A TREATISE ON DIAGNOSTIC METHODS OF EXAMINATION.** By Prof. Dr. HERMANN SAHLI, Director of the Medical Clinic, University of Bern. Edited, with additions, by Nath'l Bowditch Potter, M.D., Assistant Prof. of Clinical Medicine at Columbia University, New York; Visiting Physician to the New York City Hospital, to the French Hospital, and to the Hospital for Ruptured and Crippled. Second Edition, Revised. Authorized Translation from the Fifth Revised and Enlarged German Edition. Philadelphia and London, W. B. Saunders Company, 1911.

The second American edition of this, *the* standard work on diagnosis, is nearly free from the mistakes which were plentiful in the first edition. There is no more complete work on diagnosis on the market than Sahli's. We refer the reader to our review of the first American edition of the book, Vol. I, p. 335. H. S.

**A TEXT-BOOK OF MEDICAL DIAGNOSIS.** By JAMES M. ANDERS, M.D., Ph.D., LL.D., Professor of the Theory and Practice of Medicine and of Clinical Medicine, Medico-Chirurgical College of Philadelphia; Officier de L'Instruction Publique, etc., etc., and L. NAPOLEON BOSTON, A.M., M.D., Adjunct Professor of Medicine, Medico-Chirurgical College; Physician to the Philadelphia General Hospital; Pathologist to the Frankford Hospital. With 418 Illustrations in the Text and 25 Plates, 17 of them in Colors. Philadelphia and London, W. B. Saunders Company, 1911.

To be reviewed in the July issue.

**DIFFERENTIAL DIAGNOSIS.** Presented through an Analysis of 383 Cases. By RICHARD C. CABOT, M.D., Assistant Professor of Clinical Medicine, Harvard University Medical School, Boston. Profusely Illustrated. Philadelphia and London, W. B. Saunders Company, 1911.

To be reviewed in the July issue.



# THE ARCHIVES OF DIAGNOSIS

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AND THE PROGRESS OF DIAGNOSIS AND PROGNOSIS

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## **Special Articles**

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### DIAGNOSTICS

By GORDON K. DICKINSON

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As we find therapeutics at the lowest grade in professional work, so do we find diagnostics as the highest attainment. Therapy being largely an art, mainly suggested by individual opinion and experience, has been degraded unfortunately through ignorance of the physician and superstitions and conventionalism of the public. All the dogmas in medicine have been therapeutic or correlated with it.

Medical science has been growing as the mind has been growing, has broadened as knowledge has increased, has become more accurate as scientific observation has replaced inductive opinions, and so diagnostics has become exact and accurate.

When we speak of making a diagnosis, the thought that comes to each individual will vary. Many physicians not being properly trained in accurate observation, not fully comprehending diseases, will make superficial note of prominent symptoms, name the supposed lesion, give their opinion, and term it a diagnosis. But this is not diagnostics.

The medical man is not uniformly educated. The medical mind is not of uniform plasticity. Diagnoses made by physicians will never agree until education is complete, nor until minds capable of education alone enter the profession. The public perceiving the diversity



of opinions in our profession, noting that one may express himself very differently from another, not comprehending that therapeutics is but an art and that recoveries and reliefs often come regardless of treatment, sees little distinction between one physician and another, and is very apt to send for *a* doctor rather than *the* doctor.

A diagnosis should not be made without a thorough comprehension of the great sympathy of tissues. Physiology proves to us the active dependence of one tissue upon another, that functions of different organs are affected by conditions existing in others: for instance, appetite is induced by muscle action; the pancreas is stimulated by an intestinal juice; even the mental activities are increased, diminished, and altered by the lower bowel. So, when one organ is perverted in function or is affected by disease, other organs will sympathize and be affected. It may not be that the symptomatology perceived and stated are those of the organ primarily affected. It generally happens, however, that those secondarily affected through sympathy give no evidence by symptoms, but in order to sensibly and accurately diagnose, these underlying conditions must be understood and worked out.

The history of medicine is the history of change. Changes mean advancement. If we have advanced in the past, we are certainly now advancing into a more accurate future. Until within recent years pathologic conditions were discovered at the post-mortem table. Pneumonia was a condition seen at autopsies,—a heavy lung filled with exudate; typhoid fever was judged from an eroded bowel. Then came surgery with the ability to examine the body before death. Instead of autopsies we had biopsies, and we discovered that disease is not a terminal condition but a process. One advance in the knowledge of medicine is made, but the condition becomes more complex.

In addition, we now have animal experimentation and the results of physico-chemical analyses which open the page of life a little wider and enable us to read more distinctly the story of disease, so that to-day we have no local lesion; we have no single local pathology; we are met with surprises on every hand of the wonderful correlation between conditions lightly respected, conditions considered but as incidents, and progressive lethal disease states.

It is well accepted that some kinds of pernicious anemia and rheumatic gout are but an end link in a chain, the first link of which

is dirty teeth. The tonsils we now know to be an important port of entry for disease germs. In the back of the mouth and in cavities of the face germs may live a saprophytic life for many months. If by chance they obtain lodgment in the tonsils and the tonsils become vascularized through some irritant, the germs may pass through its tissue into the blood stream. Curiously, tonsillitis is frequently a precursor of several diseases—almost invariably of true rheumatic fever and not uncommonly of pneumonia, typhoid fever, urethritis and other conditions characterized by bacilletrias.

Body disease states expressed in symptoms will vary with the individual. We have been studying this problem too much from the side of the attacking force and perhaps not sufficiently from the side of reaction. Metchnikoff has called our attention to phagocytosis, Wright and others to antibodies, but the condition of the system as understood in the old-time "temperament," scientifically comprehended, is given little thought. One's pneumonia will depend as much upon nerve tone and upon the tissues' readiness to form and liberate polynuclears and antibodies as upon the number of cocci and their pathogenic qualities.

Severe reaction to germ invasion means a highly pathogenic germ and a highly pathogenic germ is so specialized that it would require a lesser fluctuation from the normal to inhibit growth and reproduction. The greater the reaction the larger the probabilities of bacteriolysis and a speedy recovery.

It will be seen by this rather rapid survey that a competent diagnosis demands a knowledge of the individual in full physiological activity, an accurate conception as to the etiology, and an understanding of living pathology as it moves from one lesion to another.

Symptomatology does not vary with the disease "genus," but does vary with the disease "species." Diseases of particular organs have very nearly the same syndrome, but the correlating conditions may differ. Chronic appendicitis of the fibroid type affects reflexly; chronic appendicitis of the lymphoid type sends showers of bacteria and toxins to disturb the liver.

Correct diagnoses, on the other hand, depend upon the individuality of the diagnostician. Medicine began with and was closely associated with religion and metaphysics for centuries, and as in somatic life we have the impress of our past ancestors low down in

the scale, so in our mental life we cannot separate religion, philosophy and scientific medicine without detriment. A good diagnostician must be a man of logical mind, philosophic thought, a keen observer, with a true sense of proportions, and to it all have added all that the knowledge of the day can supply through reading and experience.

The success of the several methods employed in making a diagnosis depends very much upon the intelligence of the patient. When Bismarck was ill he was extremely reticent, and the physician attending him was so annoyed by his inability to obtain proper replies to the questions directed to the great man, that he finally turned to him and told him he had better call in a veterinarian. Many times we feel very much the same way when attending those who cannot speak English and particularly those who are so full of their own opinions concerning their condition and whose observation faculties have never been developed, that answers to our questions fail to be to the point.

The public fails to recognize the fact that a physician to be successful must first make a competent diagnosis and that no man can be reasonably expected to do so unless the patient himself materially helps him to that end.

In making a diagnosis our resources are, general appearance of the patient, history, physical examination, and laboratory determinations. These are not stated in their relative importance, but given sequentially as employed in diagnostics. As a man's knowledge and experience increases and as he develops the detective sense enabling him to note appearances (particularly the facial expression, attitudes and body motion), will he acquire the ability to determine, intuitively in part, and yet to a certain extent reasonably, the several points pertaining to the nature of the affection and many others which guide one in estimating the temperament and constitutional state of an individual, whether well or sick.

To make the most of this method of observation, the light in the room should be good and the entrance of the physician prompt and unannounced. It is when the patient is off his guard and not directing his mind especially to himself or the expected visit that we find these conditions of mind and body best expressed. Perhaps this should be considered under the section of physical examination, but when physical examinations are being made the emotional faculties

are self-centered, exaggeration of conditions are shown, and this touch on the case will be absent. To the busy practitioner the first glance on entering a sick-room is a great help.

*History.*—The taking of a history of a case by studying into the symptoms expressing the prevailing lesion, of correlating conditions, and of the body in reaction or attempted toleration, is an art which requires the most perfect judgment, the broadest knowledge and the greatest care. We live by experience; we judge by experience; and, as our experience broadens and as we take advantage of it with good recollection, our ability to perceive and appreciate the value of various symptoms will be developed.

A history to be perfectly taken should be done quietly. The patient should be allowed to talk in his own way with all the usual reiterations and vague statements of distresses, being held down to facts and the recitation of symptoms as much as possible. If the person be allowed this freedom of statement, after a time points will come to his memory which had heretofore been forgotten and important postscripts, as it were, will be recited.

In the beginning of all diseases we have many points which give us valuable clues in differential diagnosis. Oliver Wendell Holmes says that "one's character is made by one's grandparents." The more we know of disease conditions and the more we search into body infirmities and tissue tendencies, the farther back we are carried to ancestral life.

The most successful diagnostician, the man whose diagnoses come closest to truth, is he who knows how best to make an anamnesis. In these days of hurry and superficial observation, when a physical examination and laboratory determination can be so quickly and easily obtained, the old-time carefully prepared history is altogether too rare. It is a good plan for the ambitious, conscientious practitioner to have in his library some master of practice who wrote before the days of examinations and to occasionally read therefrom descriptions of diseases as noted in that time.

*Physical examination.*—When we come to this, the specialties develop. No man can train himself so completely and develop each one of the five senses so thoroughly as to be capable of employing all methods used in physical examination. To be accomplished, one must have a perfect development of touch for palpation; one must

have a trained eye for observation; his hearing must be good for various tones in percussing, etc. Even odors at time will be necessary to determine. Taste is about the only sense not used in physical examination.

In palpation one must recollect that the left side of the body is more delicately innervated than the right; that the left hand being used less than the right, has a thinner cuticle and the sensory nerves nearer the surface. Proper training of the left hand in palpation soon enables one to become more perfect than if the right alone be used. In making a palpation firm pressure should never be employed, for it squeezes the blood from the finger pulp, anesthetizes the terminal bulbs and diminishes tactile sense. Again, firm pressure is more apt to give pain to the patient, with spastic contraction of superimposed muscles and interference with examination. At times, ordinary palpation is greatly assisted by light ballottement. Deep tumors are sometimes discovered by this method rather than by sustained pressure. Over every inflamed area, whether it be appendix, diseased hip or pneumonia, we have spastic contraction of muscle. Palpation will determine differences in muscular rigidity and give valuable information.

A patient should receive no type of physical examination until the history is completely made. After that is accomplished, examination should proceed, not with a view bent on corroborating any diagnosis suggested by the history, but with the determination to discover changes from the normal in any portion of the body, and it is only by comparing one method of examination with another that we are able to make a diagnosis of all the variations which will exist in an affected individual.

After completing our physical examination, laboratory determination is wise, but is most apt to lead to error. It should always be conducted in consultation with a laboratory expert. Some experts prefer to know nothing of the history of the case; others claim to be greatly aided by a more or less complete history. Let each be satisfied, and render an opinion based on his own findings. It is wise for the proficient diagnostician to use the laboratory report as he would the findings in his own examination, not as conclusive evidence, but as helps.

There is no royal road to a correct diagnosis. Hard mental

work, particularly in the taking of history and in an analysis of each and every symptom, comparing same with the knowledge of disease known through literature and by experience, is the only way to obtain an accurate system and a correct diagnosis. If, after study and thought, a diagnosis does not seem to be coming, take more history. The taking of history not only fulfills the end, but it increases the intelligence.

Sometimes as an offset it is proper to use short-cuts. Of these we have two types which may facilitate: one is the study of headaches and the other of tender spots and Head's zones. These conditions, however, should never be used except to prove deductions already formed.

An important factor in diagnostics is the discussion of the anamnesis with another. Consultations should be encouraged. A better survey of the case, a deeper knowledge of natural and morbid conditions, and a better working basis for therapy are derived therefrom.

No branch of medicine more certainly and surely develops the medical mind than the habit of careful diagnostics, and that man will rise to the top of his profession who has gained the reputation of success in diagnosis.

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### ELEVATION OF TEMPERATURE—AN EARLY AND OFTEN ENDURING SYMPTOM OF HYPER- THYROIDISM

BY HEINRICH STERN

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The Graves-Basedow symptom complexes are ulterior manifestations of hyperthyroidism, but the toxic state known as hyperthyroidism may exist in the absence of thyroid enlargement, exophthalmos, tremor, and persistent tachycardia. Hyperthyrotoxicosis may be established even when there is no suggestion of the presence of a rudimentary or incomplete form of Graves-Basedow's disease;

in short, increased thyroid activity need not manifest itself by the usual train of symptoms which we commonly associate with so-called Basedowoid conditions. The old symptom complexes arise on the basis of hyperthyroidism, and exophthalmic goiter is readily diagnosed; the lesser expressions of hyperthyroidism are commonly misinterpreted and not linked to each other. Early and mild cases of hyperthyroidism are, therefore, frequently unrecognized.

There are instances of hyperthyroidism in which the multiplicity of symptoms is really bewildering; on the other hand, a majority of the cases of moderate thyroid overfunction manifests itself by very few phenomena.

There is no doubt at all in my mind that many cases which, in a slipshod manner, are designated as neurasthenia or hysteria, are expressions of acute or chronic thyrotoxicoses. This misinterpretation is even excusable in some instances. We know that neurasthenia may be etiologically associated with Basedow's disease, and that it is often a perplexing task to differentiate between neurasthenia and certain incomplete forms of Basedow's disease. Furthermore, a minor case of hysteria and an early or mild thyrotoxic state have many symptoms in common. Some of the rarer hysterical phenomena, as hysterical fever, or hysterical tremor together with accelerated cardiac activity, clinically viewed, appear to be the immediate result of hyperthyroidism.

Elevation of temperature is one of the early, if not the earliest objective symptom of many instances of hyperthyroidism. It seems to be a much more constant manifestation in the mild than in the more pronounced instances of the affection. In many cases the mouth temperature is raised but one degree Fahrenheit, or a fraction thereof; in others the increase amounts to two or even three degrees Fahrenheit. In some cases the temperature fluctuates, with occasional intermissions, between the narrow limits of 99 and 99.4 deg. F., for months and even years; in others, the slightest exertion or excitement drives it up from 99 to 100 deg. F., or thereabouts. In a majority of instances the lowest temperature is recorded after a night's rest; continued rest in bed will occasionally reduce the temperature to normal for a brief period. The usual discrepancy of about half a degree Fahrenheit between the mouth and rectal temperatures does not exist in all cases; in some cases the discrepancy is

less than 0.3 degree, and in a few there does not seem to prevail any discrepancy at all.

While exophthalmic goiter occurs about ten times oftener in women than in men, it is still an open question whether the lesser degrees of hyperthyroidism arise in both sexes in a similar proportion. Personally, I have seen three or four times as many of the lesser cases in women than in men. It is, however, possible that some clinical evidences of lesser degrees of hyperthyroidism may differ in both sexes, and that in men the specific toxicosis is more frequently overlooked or taken for something else. At any rate, the tendency to temperature increase exists in males also, but the elevation may be less marked and enduring than in women.

Most cases of mild hyperthyroidism, which I have observed, occurred between the twenty-eighth and forty-eighth year of life, and, in women at least, there seemed to be a direct connection between thyroid hyperactivity and the functional decline of the sexual glands. In none of the cases which I have made the basis of this communication was I able to attribute the slight and often enduring temperature increase to any of the ordinary acute or chronic disorders or diseases. As a matter of fact, all these cases were remarkably free from visceral or infectious disease, and it was this very circumstance which prompted me to search for the cause of the fever in each and every instance. Were it not for the fact that I habitually employ clinical thermometry in every ambulatory patient on every occasion he presents himself, there would have been no special reason and very little incentive to study any of these cases. Most of them, if not all, would have been assigned to the habitual dumping grounds of clinical naivety and inaptitude: hysteria and neurasthenia, respectively psychasthenia.

Thyrotoxic temperature elevation never reaches the extreme height of hysterical fever, but it is enduring for a longer period. While there generally ensues a rapid decline of hysterical pyrexia, the slight thyrotoxic temperature increase abates slowly, as a rule. Like the fever of hysteria, however, that of hyperthyroidism may start abruptly, and like the former it is liable to appear, or to become augmented, in the wake of any exertion or excitement.

Hysterical pyrexia may be differentiated from thyrotoxic temperature elevation by the following three main factors, viz.: hys-



terical fever does not, as a rule, concur with physical decline and emaciation, thyrotoxic temperature elevation usually does; the urine in instances of hysterical fever exhibits a small urea and phosphoric acid quotient, whereas in the presence of hyperthyroidism it is increased; hysterical pyrexia is usually not influenced by the administration of preparations of thyroid or iodine, while these drugs are liable to prolong or aggravate the thyrotoxic fever.

These three factors will suffice to differentiate hysterical fever from thyrotoxic temperature elevation in the general run of cases. Each factor may be readily ascertained; the first, by the recent history of the patient and, if possible, a short observation period; the second, by a few simple laboratory tests that should cover a period of not less than one week, and the third, by the ingestion of medium doses of dried thyroid (0.15 gram three times a day), or of potassium iodide (gtt, x to xx of a 50 per cent. solution three times a day) for from two to four days.

The axiom of the older therapeutists that iodine should not be administered to feverish patients, holds true at the present day. For the time being, iodine is likely to aggravate the condition of many of these patients. This is probably due to the increased general metabolism in the febrile state which may also induce thyroid hyperactivity. In many instances of acute disease we thus have, in addition to the latter and on account of the accelerated metabolic processes, what practically amounts to a transitory hyperthyrotoxicosis. The untoward action of iodine in such cases is explainable by assuming that the drug facilitates or intensifies the thyrotoxic circumstance.

Now, when hyperthyroidism is not merely an incident but the sole and enduring anomaly, the iodine influence should, logically, be more noticeable. Not only the thyrotoxic fever may be rekindled, should it have temporarily abated, but also some other thyrotoxic phenomena are likely to make their appearance. Thus we may suddenly be confronted with unexplainable restlessness and excitability, or languor and apathy, and with unusual cardiac manifestations. The ensuing iodine syndrome, the one on the basis of hyperthyroidism and not that which is clinically known as iodism, is analogous to the toxic state arising from thyroid overfeeding in the healthy individual.

The elevation of temperature, I reiterate, is a thyrotoxic phenomenon when, in the absence of acute or other tangible disease, there has been loss of body weight and augmented nitrogen and phosphoric acid excretion, and when, after administration of a thyroid or iodine preparation, there supervenes or is accentuated a train of psychoneurotic and cardiac symptoms pathognomonic of well-established hyperthyroidism.

From a goodly number of pertaining cases, which have come under my observation, I select the following to illustrate my contentions:

Mrs. E. S. is the mother of one child. She has not been ill since childhood, menstruates regularly and lives in affluent circumstances. In the latter part of 1909, when she was 45 years old, she, who always led a very active life, experienced an unwonted lassitude and weariness. The slightest exertion would bring on profound exhaustion, mental depression and cardiac palpitation. There nearly always was a slight temperature elevation which would become still further augmented when the patient took a walk or engaged in the household affairs. Her physician promptly interpreted the condition as being due to the approaching climacteric and to myocardial disease. He advised a prolonged stay at some European health resorts, and especially a course of treatment at Nauheim. She returned in the autumn of 1910; her condition had not improved in the least. She felt "so faint and spiritless" as she expressed it. While in Europe she had lost about twenty pounds in weight. The menstruations were still regular. She exhibited a very low degree of resistance; the very act of changing her position from the recumbent to the sitting—while in bed—would force the pulse-frequency from 98 to 108, and higher. The blood pressure varied between 90 and 110 mm.Hg. *The temperature was occasionally normal after a night's rest; most of the time, however, it was slightly above 99 deg. F. in the morning; four or five hours afterward it usually had reached the 100 mark. Occasionally the temperature would climb to 101 and even to 101.5 deg. F. The higher degrees would especially obtain after excitement.* The patient was unduly agitated by trifling occurrences and frequently assured me that her entire mental make-up had undergone decided changes within the past year. A profound depression had overcome her, and she be-

lieved that she would never become well again. Withal there was no structural anomaly detectable anywhere. Tuberculosis could definitely be excluded. There was no gross change of the thyroid gland and no exophthalmos; palpitation and tremor, on the other hand, were present. The latter phenomena, and the fact that she had lost weight, prompted me to undertake with her a few metabolic experiments which evinced nitrogen waste and augmented phosphoric acid excretion. The administration, for purposes of diagnosis, of a tablet composed of thyroid and its modifiers, adrenals and sodium cacodylate, aggravated the physical and nervous state of the patient; the temperature remained around 101 deg. F. for nearly three days; there ensued a piercing right-sided headache, dyspnea, a dry cough and diarrhea. Discontinuance of thyroid ingestion was followed by abatement of the provoked phenomena after about two days.

There was, then, no reasonable doubt that the patient's condition was the outcome of a thyrotoxic process. She was subsequently treated for hyperthyroidism with fairly good results. Palpitation, tremor, irritability and prostration have disappeared; the body-weight has increased; the nitrogen equilibrium has been reestablished, *but a slight, more or less intermittent, temperature elevation persists*. The patient's catamenial status remains unchanged.

The induced thyrotoxic phenomena do not invariably abate when thyroid or iodine administration has been discontinued. They may persevere. Thus, thyroid and iodine may not only activate a dormant hyperthyroidism, but their brief administration may be followed by an enduring thyrotoxicosis, so that we truly may exclaim: "Die Geister, die ich rief, die werd' ich jetzt nicht los."

In instances of suspected hyperthyroidism great care must therefore be exercised when administering thyroid or iodine for diagnostic purposes. The drugs should be given in medium, but active, amounts, and be immediately discontinued on the appearance of thyrotoxic symptoms. It seems, on the other hand, that thyroid or iodine will not so readily cause lasting harm in instances of frank hyperthyroidism. There was a time—and it is not so long ago—when we believed that preparations of thyroid were indicated in the treatment of exophthalmic goiter! In outspoken cases of hyperthy-

roidism, thyroid or iodine are, of course, not needed for diagnostic purposes.

In hyperthyroidism there prevails augmented perspiration and body-heat. There is also this latent tendency to temperature elevation. The three symptoms are undoubtedly the result of one and the same cause: either the direct thyroid oversecretion, or the increased irritability of the sympatheticus. But while the subjective feeling of heat continues uninterruptedly for a more or less protracted period and the determinable increase of body temperature, with occasional intermissions, for practically the same length of time, the attacks of profuse perspiration supervene after longer or shorter intervals. There is no doubt that in a number of cases the heat-regulating apparatus of the organism is still able to control temperature elevation to a certain extent.

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## THE COMPLEMENT-FIXATION TEST IN GONORRHEA

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I wish to call attention to the excellent paper of Dr. H. J. Schwarz, "The complement-fixation test in the diagnosis of gonococcic infections" in the May number of the *American Journal of the Medical Sciences*, which, so far as I can see, thoroughly covers the ground, and, in fact, leaves nothing for me except reiteration.

I regard this new test of the blood as the most important advance made in years in the study of gonorrhea. According to Schwarz we are not pioneers in this field, as in 1906, Müller and Oppenheim did the first work in this line, and since also others have prepared the ground, but it is my belief that Schwarz's work has placed this test upon a solid foundation.

This is due to the manner of making the antigen a polyvalent one, it having been found that the antigen made from gonococci taken from one strain will only give a positive result in a case of gonorrhea which belongs to that strain; in the work done by Torrey in the Loomis Laboratory, it has been found that there are at least twelve such separate strains. There may be more, but so far as I

know others have not yet been discovered; if they are they will have to be included in making up an antigen.

Work along this line was suggested to me by Dr. James C. Johnston, who had the following case. A gentleman whom he had treated for some time for chronic prostatitis was about to be married with Dr. Johnston's permission. The patient wanted to know whether there was any other test that would prove that he was well. It occurred to Dr. Johnston that possibly the test based upon a Wassermann reaction with the gonorrheal elements might be of assistance, and accordingly an experiment was made and the test turned out to be negative. It proved to be, however, a rather complicated test, inasmuch as, if I remember rightly, instead of, as now being done, with a polyvalent antigen, that is, an antigen made up of all the different strains, a complete reaction had to be made with each strain. But this experiment suggested the line of work which has been carried out at Cornell Medical School by Dr. Schwarz. At that time it was supposed that no work had been done along this line, but, as above stated, it seems that several workers in the field had already made attempts beginning as early as 1906.

This work was begun in the latter part of May, 1910, and up to September, 1910, Dr. Schwarz had examined the blood of some eighty patients taken from my clinic, and from October to April, an additional number of 157 cases were examined by the same method, making in all 237 cases from my clinic alone. In this large number of cases the tests seemed to work out satisfactorily.

In January, the antigen for some reason failed to work properly for about three weeks, and all the cases examined during that time were reported negative, whereas, some of them certainly should have been positive. It was then found that in the preparation of the antigen some mistake had occurred in consequence of which it failed to do its work properly. My attention was called to it by one case which should have given a positive reaction. A boy 22 years old, who had had gonorrhea three years before, had been irregularly under treatment during that time. He had a slight urethral discharge containing gonococci, an anterior stricture and a chronic prostatitis. It was this case which led me to suspect that there was something wrong, so that in most of the other cases examined during this period, the reaction was repeated after a fresh antigen had been

made, but as some of the cases were returned positive and others negative, we felt that we could rely on these reports, but it was not until May that I was able to get hold of this particular case for examination, and in this case his condition having remained practically unchanged since the examination in January, the blood test was found to be positive, as it should have been.

My idea was as far as possible to present this test from a clinical standpoint.

The manner of carrying out the test and making the antigen, etc., is published in Dr. Schwarz's article.

In selecting cases we began the test with chronic cases, some in which gonococci could be demonstrated and others in which they could not, in order to get data to go by and gain experience with the idea of finding out in what kind of cases we should get a positive reaction. It was found that the results were generally negative in cases of long standing and in primary infections early in the disease. In primary gonorrhea the earliest case to give a positive reaction was one in which it had existed two weeks, though some in which the disease had lasted longer still returned a negative reaction. Following is a summary of the cases examined:

There were 2 cases with chronic urinary trouble having no history of gonorrhea and in which no tubercle bacilli could be found, which gave a negative reaction.

Five cases of stricture, one without gonorrheal history, was negative. Four cases of stricture with histories of previous attacks of gonorrhea, in one of which there had been no gonorrhea for ten years, yielded a positive reaction.

Of cases of chronic prostatitis in which the prostatitis still existed there were 19 with a previous gonorrheal history which gave a positive reaction. There were 11 with previous gonorrheal history which gave a negative reaction. There were 3 in which there was no gonorrheal history, or the history was questionable, which gave a negative reaction.

There were 40 cases of disease of the verumontanum. Of these, 35 gave a history of previous gonorrhea. Of the latter, 14 were positive and 21 negative. There were 5 cases in which the history of gonorrhea was either doubtful or denied, that proved negative. There was one case, in which the history of gonorrhea was denied,

which gave a positive reaction; repeated two weeks later, it was still positive; the blood of the patient after having been under treatment for six months, gave a negative reaction.

One case of impotency without gonorrheal history was negative.

There were 2 cases of sterility. One, without gonorrheal history, proved negative; the other, with gonorrheal history, was positive.

There were 5 cases of gonorrheal rheumatism positive. Two cases without gonorrheal history, but whose symptoms possibly pointed to gonorrheal rheumatism, proved to be negative.

Of 5 cases which had been affected with multiple attacks of gonorrhea, 4 were negative, and one was positive.

Of 3 cases of recurrent epididymitis 2 were positive and in one the blood reaction was doubtful, and on being repeated was still doubtful. One patient with a slight discharge exhibiting extracellular diplococci, and a history of gonorrhea twelve years before, gave a weakly positive reaction.

One case with a previous history of gonorrhea, but without signs of an existing gonorrhea, gave a weakly positive reaction.

A case of masturbation for three years, without a gonorrheal history, gave a negative reaction.

One case of epididymitis which ensued two years after the only attack of gonorrhea the patient has had, gave a positive reaction. Three cases of epididymitis without gonorrheal histories gave negative reactions.

There were 22 cases classified as recently and apparently cured. Of these, 12 gave a positive reaction; one weakly positive, 9 negative.

Of twelve cases in which the test was repeated, 11 gave the same reaction as in the first test; one gave a different reaction.

There were 9 cases in which the first test was positive, that gave a negative result when a second test was performed after the treatment had been continued for some time.

There were 8 candidates for matrimony who appeared to be clinically well. Of these 6 gave a negative, 2 a positive reaction.

One case of urethritis simplex gave a negative reaction.

Three cases which had given a negative reaction returned to the clinic with a fresh infection.

Three cases of chronic gonorrhea, by which I mean patients with chronic urethral discharge but in whom no local focus could be found, were tested. In 2 of these cases gonococci were found; in the other no gonococci could be demonstrated; the reaction was positive in every case.

There were 19 cases in which the patients had had both syphilis and gonorrhea, and in these cases the complement-fixation test for gonorrhea as well as a Wassermann reaction were made. In 3 of these cases both tests were positive. In 6 both tests were negative. In 8 the complement-fixation for gonorrhea was positive and the Wassermann negative. In 2 the Wassermann was positive and the complement-fixation negative.

The question, which I have tried to solve and which still remains unsolved, is, does a positive reaction mean that there still exists a focus of living gonococci somewhere in the body, and if so, is such a patient to be looked upon as still capable of infecting. Or, may antibodies formed in the blood persist for an indefinite period after the gonococci are all dead. We have records in several cases where the tests, made on patients who seemed to be clinically cured, proved to be positive, where after continuation of treatment for some months, a second test yielded a negative reaction. This shows one of two things: either the patients were cured at the time they appeared to be clinically well, but the antibodies had not had time to die out, or else that they were nearly cured and further treatment accomplished the object sought.

That the blood may show a positive reaction for a long period after the primary infection, the following case would seem to show. The patient was suffering from chronic prostatitis; he came to me from time to time with a relapsing discharge; with the discharge there was cloudiness of the urine and involvement of the prostate, and the whole period of time during which I have known this patient—a period of twelve years—I have never been able to demonstrate gonococci. This patient came to my office last fall. I had not seen him for perhaps two or three years. A test of his blood was taken with six strains; the usual antigen as at present made contains twelve strains, but it so happened at this time that six of the strains had died out and Dr. Schwarz was then working with six strains only. The test of the blood was negative. A few days later,



having succeeded in obtaining the missing six strains, a new test of the blood with all twelve strains gave a positive result.

In differential diagnosis this test would, I believe, prove most valuable as illustrated by the following case. The patient had a painful arthritis of the knee, which latter was stiff; walking caused pain. Often he would be laid up in bed, at other times he was able to get around again. For a period of eighteen years he had been in this condition; gradually it grew worse. The diseased joint had been considered to be tuberculous. Shortly before the patient came to me in November an X-ray picture had been taken for the first time, and the maker of it had declared that it did not look like a tuberculous joint. An orthopedic surgeon was consulted who maintained that it looked like a gonorrheal joint; after this the patient came to me for an opinion. He was then 33 years old. At the age of 13 he acquired a gonorrhea, and at 15 he had his arthritis; a second attack of gonorrhea, which lasted for a short time, he acquired at the age of 23. He married afterwards, and had one child. Before advising anything I had his blood examined by the complement-fixation test; this proved positive. The patient was then put on a course of gonococcus bacterins, at first every other day, then twice a week, then once a week with steady improvement as regards the pain, so that at the end of six weeks he felt perfectly well though he had still a stiff knee. The circumference of the knee had reduced three quarters of an inch during that time. His general condition was also markedly improved. He still has a stiff knee, but there has been no return of an inflammatory process.

Another case of interest in which a differential diagnosis was called for, is the following: The patient, a young man, after exposure to wet, had pain and swelling in both knees. He was treated for six months for rheumatism and then his physician declared that it was syphilitic. As the young man was looking forward to getting married he was naturally alarmed. On his own account he had a Wassermann test made which was negative. His physician told him that a negative Wassermann test did not prove that syphilis was not present, whereupon he came to me. I had a double test made for gonorrhea and for syphilis. As a matter of fact I had treated the patient for gonorrhea a number of years before at the dispensary.

He had a chronic prostatitis. Examination of his blood was made by Dr. Schwarz. The Wassermann test was negative, the gonorrheal test positive.

During this time I have had a number of cases in my private work in whom the test has been of value, and I have added it to my routine work with the majority of cases that I have control enough over to make them come regularly. One case I recall, sent to me from another city; it was a patient who was being treated for a chronic gonorrhea and whose marriage was shortly to take place. He came to me for an opinion. In going over his history it occurred to me that he never had had a gonorrhea. His condition was much the same at the time of his examination as it had been in the beginning. There was a slight mucoid discharge containing a few bacteria of different kinds; the discharge and his later condition were caused by disease of the verumontanum. Examination of his blood proved negative, and I felt justified in telling him that he probably never had a gonorrhea.

There were 19 cases of candidates for matrimony. Of these, 9 gave positive and 10 negative reactions.

In one case of epididymitis where there was a question whether the disease was of a tuberculous, specific, or gonorrheal nature, a Wassermann and a gonorrheal test gave negative results.

A neurasthenic patient with peculiar pain in the region of the sacrum gave a history of gonorrhea. His prostate was practically normal, and was not markedly sensitive to the examining finger. The verumontanum was normal. A few streptococci were found in the material expressed from the prostate. The examination of the blood for gonorrhea showed negative results.

Another patient, a married man who had been under treatment for some time, made the statement that his condition had practically remained unchanged since starting treatment. His affection was one of the verumontanum. The examination of his blood for gonorrhea yielded a negative result.

THE SIGNIFICANCE OF THE WASSERMANN REACTION  
IN GYNECOLOGY AND OBSTETRICS, AND ITS  
BEARING UPON THE QUESTION OF  
THE INHERITANCE OF SYPHILIS

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In the last decade great strides have been made in our knowledge of syphilis. The discovery by Schaudinn of the spirochæta pallida and the introduction of the specific blood reaction by Wassermann have opened new paths of investigation and given us many new points of view in our conception of the disease. The result of this naturally was, that every branch of practical medicine should be stimulated to further research, and it is not to be wondered at that an attempt should be made to solve certain, hitherto entirely obscure, questions in gynecology and particularly in obstetrics with the aid of these new discoveries.

Until a few years ago the various questions connected with the inheritance of syphilis, expressed for example in the two well-known laws of Colle and Profeta, were to a certain extent settled, and these teachings were handed down from generation to generation as definite principles. We live, however, in an age of permanent change and vivid iconoclasm: *πᾶν τρεῖ*.

I shall not enter into details regarding the spirochæta pallida and the technic of the Wassermann reaction. These subjects belong to the domain of laboratory workers. I shall plunge immediately in medias res and first discuss the significance of the Wassermann reaction in gynecology.

The Wassermann reaction has no very extensive application in gynecology. I would counsel its use especially in cases of so-called suspicious erosion, i.e. in such erosions which resist the ordinary therapeutic measures. In many cases it is advisable that a Wassermann reaction be made before one undertakes an amputation of the cervix. I recall a case which I had occasion to treat 8 years ago at a time when the Wassermann reaction was still unknown. It was a

case of one of these suspicious erosions which I tried to heal by every possible mode of treatment. Finally I placed the patient upon a course of antisppecific treatment whereupon the symptoms rapidly disappeared. Nowadays the true nature of the lesion would have been quickly cleared up by means of the Wassermann reaction. One must not forget, however, that a negative reaction by no means excludes the possibility of lues. It is a well-known fact, substantiated by definite case reports, that individuals positively syphilitic can give a negative reaction. On the other hand, a positive reaction must be taken as definitely indicating the presence of syphilis. The reaction may be further used for placing a more certain diagnosis in cases of metrorrhagia, in which the etiology cannot be traced to the more ordinary causes. Heynemann has reported 2 such cases where etiologically there were no other factors and where the Wassermann reaction was positive. The endometrium in these cases had a most characteristic appearance, inasmuch as it presented a most marked glandular development. In all cases of pointed condylomata in which the reaction was taken the results were negative. This corresponds entirely to the old clinical viewpoint that condylomata acuminata have no relation to lues. The Wassermann reaction should further be applied in all such cases where the physician is called upon to give his consent to marriage, and where there is any question as to the health of either of the contracting parties. This consent, however, should not be made dependent on a negative result, but in such cases we must be guided by the symptoms and results of treatment. In this type of cases an extended serological supervision is indicated. The reaction is further indicated in all cases that are at all doubtful, but particularly where there is a history of repeated miscarriages. If the result is positive, a course of antiluetic treatment should naturally be instituted, and from time to time the case should be examined from the serological standpoint. So far as the examination of prostitutes is concerned, it should be mentioned in passing that the method is only of use to definitely establish the diagnosis.

This is in a general way the field of application of the serological method of examination for lues in gynecology.

In obstetrics these methods have a much more extended application. Two well-tried obstetric laws, the above-mentioned laws of

Colle and Profeta, have now been abandoned and new doctrines accepted in their place. Colle's law states that the mother who shows no signs of syphilis and gives birth to a luetic child, which has been infected by the father, should not be looked upon as syphilitic. Profeta's law, on the other hand, states that a healthy child born of a luetic mother should not be looked upon as syphilitic, but should be regarded as immune to syphilis.

So far as Colle's law is concerned, the latest researches repudiate it entirely. In other words, the mother of a syphilitic child, even if she shows no signs of lues, must be regarded as luetic, though the infection may be in a latent form. This conclusion must be reached, inasmuch as the majority of such women give a positive Wassermann reaction. Heynemann found 43 positive Wassermann reactions in the mother in 47 cases belonging to this group. In 19 cases in which the reaction was positive the test was repeated in from 6 weeks to a year after delivery. In 16 of these it was still positive. The 3 negative cases according to Heynemann have no significance, as variations in the result of the Wassermann reaction have frequently been observed without recognizable cause. The permanency of the reaction proves rather conclusively the incorrectness of the view that the antibodies of the luetic child enter the mother's blood and then give the reaction. For if this were the case, these antibodies would disappear from the blood a short time after confinement, and the reaction would become negative. It must, therefore, be assumed that the substances necessary to give a Wassermann reaction are actually formed in the body of the mother. To be sure one might insist that spirochetes should also be found in the blood of such women. This, as a matter of fact, has only been accomplished once and has been reported by Trinchese. He examined the blood of 50 mothers and was only able to find the spirochete once. This is almost a negative result. The results of other investigators who examined the placenta for spirochetes were similar. In every case in which the spirochetes were found they were detected in the fetal, but never in the maternal portion of that organ. Even if these results have been negative, the positive results with the Wassermann reaction must be accepted as a positive proof of the existence of syphilis, either in a latent or florescent form, for, as I have mentioned above, a positive Wassermann reaction must

be regarded as a positive proof of the existence of lues, provided the examination has been made by a competent man.

These conclusions have been confirmed by many observers. Knöpfelmacher and Lehdorf are of the opinion that women who have given birth to syphilitic children are themselves luetic. According to their investigations, from 72 to 91 per cent. of the cases give positive reactions even several weeks after delivery. In from 40 to 50 per cent. of the cases there was even a positive reaction some years after the confinement. According to these investigators we must not assume that the mother has been infected by the child, but that in the vast majority of the cases the mother of the syphilitic child is herself primarily syphilitic.

Baisch, who has contributed several excellent papers on this subject, has, as a result of his investigations, come to the conclusion that almost all mothers of syphilitic children give a positive Wassermann reaction. He also emphasizes the fact that a negative result by no means excludes the possibility of an existent lues in the mother. The fact that occasionally a positive reaction is found in the mother and a negative in the child, or vice versa, proves that the antibody is not purely a fetal product which enters the mother's blood via the placenta. Baisch further advances the view that, while a very small percentage of primipara (scarcely 8 per cent.) who bear luetic children escape the infection, the danger of infection is greatly increased with each succeeding pregnancy. Ninety per cent. of all mothers of luetic children are surely syphilitic, even if two-thirds of these give not the slightest trace of clinical symptoms.

Schlossmann agrees with Baisch and explains Colle's law, viz., the apparently healthy mother is immune because she is already infected.

It will be seen from the aforesaid that we must revise our conception of Colle's law or rather entirely discard it, inasmuch as the apparently healthy mothers of syphilitic children are themselves really syphilitic. There is one point, however, according to Heynemann, in favor of Colle's law and which speaks against the luetic infection of the mother in these cases. This is the regular absence of syphilitic symptoms. If we remember, however, the processes occurring in active immunization, these facts will be more readily

understood. As is well known, by active immunization we mean the introduction of toxins into the body in order to bring about the production of antibodies against these poisons. In these mothers whose cases are covered by Colle's law a similar condition exists. They have acquired an immunity against syphilis by being very mildly infected.

We now come to a consideration of the effect of these newer discoveries upon Profeta's law. As we have already mentioned this law states that the apparently healthy children of syphilitic parents are themselves free from lues, or in its narrower conception, that such children are to be considered as only temporarily immune to syphilis. The serological examinations have also shown that this law has no longer any justification, at any rate so far as its more general interpretation is concerned, inasmuch as such children must likewise always be regarded as syphilitic. In almost all the cases of this type a positive Wassermann reaction was found in the children's blood. Hence these children have been infected, although at their birth there was no clinical evidence of an existing lues. Even a negative result does not prove anything in these cases, as Halberstädter, Wechselmann and others found that negative reactions could change to positive ones within a short time. In such cases, according to Polano and Schenk, there is only a temporary immunization; the antibodies which have been formed in the mother, having been transferred into the fetus. The child inherits temporary immunity. Each succeeding child receives fewer antibodies from the mother. Let us consider for a moment the much discussed question of paternal and maternal infection. At the time when Colle's law was still looked upon with favor, paternal infection was regarded by far as the most important. According to the modern point of view we can no longer speak of a pure paternal infection in the cases which are covered by Colle's law, for maternal infection likewise plays a definite and significant rôle. Viewed from the present standpoint it is also entirely inconceivable that the ovum could develop at all, if it is directly infected with so large and so fertile an organism as the *spirochæta pallida*. Heynemann calls attention to the fact that our previous clinical experiences, corroborated now by the Wassermann reaction and the demonstration of the *spirochæta pallida*, confirm this view as to the importance of the maternal

infection. It has long been known that interruption of pregnancy as a result of lues can occur any time during the pregnancy, but that this usually occurs in the second half of that period and that the older the parental syphilis the longer can the pregnancy last.

Let me briefly call attention to the important wet-nurse question, although this question has not the great significance in this country as it has in Europe. Still every general practitioner will at some time or other be compelled to select a healthy wet-nurse, and I must therefore emphasize the fact that no nurse should be accepted unless her blood has first been tested for the Wassermann reaction. If the reaction is positive, she must at once be discarded, for she cannot be used to nurse a healthy child, even if she is free from clinical symptoms and the history is negative, so far as a luetic infection is concerned. As we have already remarked, a negative reaction is by no means a conclusive proof against the existence of lues, but we may feel moderately safe in recommending a nurse with a negative reaction particularly if this negative result is found on repeated examinations. In cases where the reaction is partially inhibited, it is advisable not to use the individual as a wet-nurse. Finally, to clear up the situation as to whether or not a nurse is infected or not, we could examine her milk. According to O. Thomsen's investigations, the milk of luetic women very frequently gives a strong positive Wassermann reaction and this may also occur in women whose blood serum gives a negative reaction. This reaction of the milk is the same in the latter part of pregnancy as in the beginning of the puerperium. This reaction is present in the first 2 or 3 days of the latter period, disappears in the course of the next few days if the women nurse, but persists for about two weeks if they do not.

In the foregoing I have attempted to give the mutual relations between the Wassermann reaction on the one hand and the science of gynecology and obstetrics on the other. Let me summarize my conclusions. The parents of newborn luetic children must always be regarded as syphilitic, and must be treated accordingly, vice versa, the apparently healthy children of syphilitic parents must be likewise looked upon as luetic. It is very important to decide the question as to whether or not an apparently healthy child of a luetic mother may be put to the breast of a healthy woman. This question



must be answered in the negative, as we have seen that the negative reaction immediately following birth may change to a positive one within the next few weeks. The luetic symptoms may also only become visible after a certain time has elapsed. For this reason the greatest care is necessary in this respect. Of course, obviously syphilitic mothers may nurse their obviously syphilitic children. A mother with definite signs of lues should not nurse her apparently healthy child and a child with signs of syphilis should not be put on the breast of its apparently healthy mother. In such cases artificial feeding is indicated and wet-nursing should not be considered.

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THE DIAGNOSIS, ETIOLOGY, AND PROGNOSIS OF  
INFANTILE SCURVY

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Scurvy in infancy and early childhood is characterized by severe anemia, with extreme pallor, spongy, bluish or purplish gums that bleed easily, tenderness of the extremities or affected part, pain upon movement, pseudo-paralysis, swelling of the long bones, and a tendency to periosteal, subcutaneous and submucous hemorrhages.

For the full development of the clinical picture, it frequently takes weeks or months, and we may say practically only artificially fed children who have been taking an unsuitable diet for several months are affected. In an advanced case of infantile scurvy what impresses the careful observer at once is the lack of movement or activity in the baby. It lies perfectly quiet and does not kick its legs as healthy babies do. This symptom is on account of the pain which is present in the majority of cases. This pain was evidenced in 314 out of 398 cases collected by the American Pediatric Society, and in 145 cases it was the first symptom noted. Another prominent symptom is bleeding or some abnormality of the gums. This occurred 313 times, and it must not be forgotten that such abnormal conditions of the gums may occur in children without teeth, or just cutting teeth; but in many babies before the teething age the gums are not affected. It is now generally known that there are two principal factors which enter into the causation of infantile scurvy: (1) the kind of food the child has been taking; (2) individual susceptibility.

Although infantile scurvy occurs with all forms of artificial feeding, certain methods of preparing the food pave the way for the disease, and my experience has been that sterilized (boiled) milk heads the list, then come the various proprietary, prepared foods, either when given alone or when mixed with heated milk. Then come pasteurized milk, milk, flour mixtures, and gruels. In each case there is a loss by heat of certain *fresh* properties of the

food, which seem to be essential to the health and growth of the child. Thus it has been shown when milk is sterilized it undergoes the following changes, and these have been considered etiological factors in infantile scurvy:

(1) Expulsion of carbonic acid gas, which stimulates the secretion of gastric juice.

(2) Diminution of the amount of lime and free phosphoric acid with increase of insoluble calcium phosphate, which is not absorbed, and precipitation of the antiscorbutic citric acid.

(3) A large part of the lecithin in the nucleon is destroyed and precipitated as unabsorbable, inorganic compounds.

(4) The casein is changed and rendered unabsorbable, and the soluble albumen is coagulated.

(5) The fat-globules unite into larger masses, that are less easily absorbable.

(6) The ferments are destroyed, and thus are lost antitoxic and immunizing substances, and microbicidal compounds of great value to the child.

Similar changes, no doubt, occur in the prepared foods and to a less extent in pasteurized milk. In the flour and gruel mixtures there is insufficiency or lack of certain necessary elements of animal origin in the food, such as animal protein and organic salts, which the system requires.

Experiments which were made in the feeding of calves with sterilized, pasteurized, and raw milk showed that:

(1) More fat and protein were digested when raw milk was fed than when pasteurized milk was given.

(2) More protein and fat were digested when pasteurized than when sterilized milk was given.

(3) More protein and fat were digested when raw milk was given than when sterilized.

(4) Calves gained more when raw milk was fed than when the milk was pasteurized. Sterilized milk apparently had least value as food.

(5) Calves which lost on sterilized milk were stationary or gained very slowly on pasteurized, but gained rapidly on raw milk.

(6) Diarrhea was set up in calves by the use of sterilized milk, and stopped when raw milk was fed.

There is strong evidence to show that when the baby's food is so treated a somewhat similar effect may be expected.

Other causes of infantile scurvy are monotony of diet and a diet which is insufficient in nutrient ingredients. Thus it occasionally develops in children who have been fed for a prolonged period on poor quality breast milk, or poor quality or much diluted cow's milk.

It is evident that there is individual susceptibility in this disease. Were it not so there would be many more cases of scurvy. As it is, however, comparatively few cases are seen. And it is not very infrequent to find one baby with scurvy, and another fed in almost identically the same way, that appears to be thriving. The many attempts to "humanize" cow's milk have favored the increase of this formerly rare disease.

The more frequent occurrence of infantile scurvy among the families of the well-to-do is accounted for by the fact that there is more care and uniformity in the preparation of the food, and proprietary foods are more frequently employed. This disease is found, however, not infrequently among the poor and ignorant, and one should always bear in mind, when one meets with a progressive anemia in a bottle-fed baby, especially if there is a tendency to swelling or bleeding of the gums, or tenderness of the bones, that we may be dealing with a case of infantile scurvy.

As the following case is so well marked and typical of the disease in all its symptoms, I will report it in detail.

First seen April 22, 1910.

This was a male child 8 months of age. Family history negative. Personal history: Child was born at the seventh month of pregnancy and was small and ill nourished and never nursed the mother's breast, but was given Borden's malted milk, one teaspoonful to the glass of water, on which diet it was fed up to two weeks ago, when the mother began giving it modified cow's milk. Four days previous to the change of milk the mother noticed "red spots" on the chest, neck, and arms. She also noticed "red spots" on the left leg and swelling of that leg. The mother stated that for some time past the baby had been unable to move its legs, and lay as if paralyzed; and when it was handled, bathed, or the legs were touched, as in changing the diapers, it cried as if in great pain.

One week ago the baby began vomiting large quantities of blood, and this lasted for four days. Moreover, during this time the mother noticed that the urine was of a dark red color. The mother stated she had been to see six different doctors and had been to a Child's hospital with the baby, and none had been able to discover the cause of the trouble, and she believed the baby must die. The mother told me the child was never known to smile, but always had an anxious look.

Physical examination showed an undernourished, small and poorly developed child, with swollen appearance of the face, and a pasty, waxy-white look. The gums were swollen, dark red and bled easily. The legs were swollen and did not move. The lower half and inner aspect of the left leg was blue and covered with small subcutaneous hemorrhages. There was also a fusiform subperiosteal hemorrhage of the tibia, and the leg was somewhat drawn up and flexed at the knee. The child weighed  $8\frac{3}{4}$  pounds. Blood examination showed hemoglobin 60 per cent. Diagnosis infantile scurvy.

Modified raw cow's milk was ordered (a formula suitable for the age), also the juice of an orange every day.

April 25th. Child improving. Takes milk and orange juice well. Less pain on handling.

April 29th. Child much better, no pain on handling, good appetite for the raw milk and takes the juice of an orange each day. Has some bronchitis. Subcutaneous hemorrhages on left leg disappearing rapidly. Smiles, and plays, and moves legs.

May 1st. Child's condition steadily improving. Subcutaneous hemorrhages have entirely disappeared, and the legs are moved freely without pain.

May 7th. The child is perfectly well and weighs  $11\frac{1}{2}$  pounds, having gained  $2\frac{3}{4}$  pounds since April 22d, when it came under my care. This child was seen by me July 20th, 1911, and was a perfect specimen of health, weighing 32 pounds when 2 years of age.

Almost all the symptoms that may occur in this disease were present in this case. Many cases are seen, however, earlier in the disease where all of these classical symptoms are not present. No doubt numerous cases of scurvy are cured when the presence of the disease has not been suspected, by a simple change in diet, ordered because of the anemia and apathy or rickety condition of the

THE ARCHIVES OF DIAGNOSIS



Child Lying in the Characteristic Position, Holding the Left Leg as if Paralyzed



This illustration shows Subperiosteal Hemorrhages of the Tibia and Subcutaneous Hemorrhages of Left Leg in Upper Picture

THE DIAGNOSIS, ETIOLOGY AND PROGNOSIS OF INFANTILE SCURVY

E. Mather Sill



patient. In the report of the American Pediatric Society of 379 cases, the prevalence of hemorrhages from the different parts was as follows: In all but 16 the gums were involved to a greater or lesser degree. There were cutaneous hemorrhages in over 50 per cent., bleeding from the mouth or gums in 25 per cent., from the nose in 9 per cent., from the bowels in 10 per cent., and blood in the urine in nearly 6 per cent. Infantile scurvy, it should be remembered, occurs chiefly in children under two years of age, rarely in older children. The following table shows the ages of 42 of my own cases.

1 case	3½ months	of age.		
2 cases	5	"	"	"
3	6	"	"	"
2	8	"	"	"
2	9	"	"	"
2	10	"	"	"
6	12	"	"	"
13	13-18	"	"	"
6	19-24	"	"	"
5	2-3 years	"	"	"

—  
42 cases.

All my cases had more or less marked anemia, the hemoglobin being from 40 to 70 per cent., but with no other marked blood changes. A characteristic appearance in these cases was the waxy-white or ashen color of the skin; pain in a greater or less degree on handling was present in more than three-quarters of the cases. (This symptom was present in 314 cases of 379 cases collected by the American Pediatric Society, and to a marked degree in 145.)

These children were fretful and had dark bluish, red gums which were spongy and tender, and bled easily when touched. This hemorrhagic area is seen only about the teeth or those that were cutting through. In children without teeth it is not so common to see ulceration or bleeding of the gums.

Twenty of these children had rickets, or 48 per cent. Furthermore, it has been shown by post-mortem examination of cases dying of infantile scurvy that the changes in the bones found in rickets are present, although not always observed during life.

Fever of an irregular character was present at one time or



another in about half the cases, but the temperature was never over  $101.5^{\circ}$  or  $102^{\circ}$  F., and the fever was not constant. It was usually  $99^{\circ}$  to  $100^{\circ}$  F. when present. The pain and swelling seemed to affect principally the lower extremities, but in some of the cases there appeared to be pain and slight swelling at the costochondral junction of the ribs. The swellings on the lower extremities were fusiform in shape. Subcutaneous hemorrhages or ecchymoses were present in a little less than half the cases.

In several cases I have noted a hemorrhagic swelling of the eyelids and an exophthalmus, which has been mentioned by some authors, the exophthalmus being caused by subperiosteal hemorrhages upon the bones of the orbit.

A rather rare condition is pain and tenderness of the spine, which may remain after other prominent symptoms have disappeared.

All my cases had been fed either on proprietary baby foods, sterilized, pasteurized, or condensed milk, or a combination of some of these foods. Some had had for a long time a continuous diet of some article, or articles, of food. Most of the cases occurred in the spring, fall and summer months, when the milk used is more often boiled.

The clinical picture of a well-marked case of scurvy is so clean cut and apparent that there should be no difficulty in diagnosis. But cases in the early stages of the disease that present only one or two symptoms may be easily overlooked or misinterpreted or mistaken for some other condition. Moreover, it is frequent to see cases of well-advanced scurvy that have been treated for weeks for other diseases, as, for instance, the case I have given in detail.

Thus the spongy condition of the gums may be mistaken for stomatitis. With the latter, however, there are other parts of the aural cavity affected as well as the gums, and in scurvy there are no ulcerations. The fusiform swellings and pseudo-paralysis may be taken for congenital syphilis, but in that disease there are other characteristic well-known signs. Scurvy may be mistaken for rheumatism, disease of the hip, fracture or abscess of the thigh, acute poliomyelitis, osteosarcoma, periostitis, otitis, osteomyelitis. In these the diagnosis is made from the pain, location and shape of the swelling, fever, discoloration, and characteristic gingivitis, and

later on, other signs of a hemorrhagic diathesis are valuable in verifying the diagnosis. In difficult cases, X-ray pictures of the diseased bones may aid in the diagnosis.

A large percentage of the cases at one time or another are mistaken for rheumatism. It should be remembered that rheumatism rarely occurs in children under two years of age, while infantile scurvy is seen principally in children under two years of age. Then again in rheumatism there is usually more or less fever present and the pain is apt to skip from joint to joint and affect also the upper extremities, while in scurvy fever is not at all constant, is frequently absent, and when present is of low degree. The pain and swelling are almost always in the lower extremities in scurvy, and the gradual onset, history of improper feeding, and spongy or bleeding gums will clear up the diagnosis. In acute poliomyelitis the onset is sudden and pain in the paralyzed limb only lasts during the first few days, as a rule, and is along the spine and course of the nerves, and on pressure or handling no pain is elicited. While in scurvy we have the reverse set of symptoms. In infantile paralysis the paralysis is real, while in scurvy it is only apparent. With a careful examination of a child, fracture, or abscess of the thigh, or hip joint disease should never be mistaken for infantile scurvy.

Where there is bleeding from the stomach or intestines, or hematuria, careful examination will reveal spongy gums or tender painful legs or ribs, or perhaps a fusiform swelling on one of the long bones. When rapid improvement and subsidence of symptoms occur in 24 to 48 hours under anti-scorbutic treatment, we may be sure we are dealing with a case of infantile scurvy. Infantile scurvy may be mistaken for arthritis, such as gonorrheal arthritis, which may occur in young infants; or, where several joints are involved, pyemic or septic arthritis must be thought of. Careful examination will show the tenderness and swelling in cases of scurvy to be in the shafts near the joint, but not in the joint itself or about the joint structures.

In syphilitic epiphysitis there is a similarity to scurvy on account of the pseudo-paralysis, epiphyseal swelling and tenderness, and the enlargement of the liver and spleen; but syphilis more often affects the upper extremities, while in scurvy the lower extremities are usually involved, and the swollen gums and subcutaneous hemorrhages are present in place of the characteristic eruption of syphilis.

In cases of scurvy, the first symptom may be blood in the stools. Then the case may be mistaken for dysentery or enterocolitis or intussusception, or blood may appear in the urine with albumin, when acute nephritis may be suspected. When the blood is not mixed with the feces but occurs with a normal stool, and no fever is present, enterocolitis, etc., can usually be eliminated. And when we get other symptoms, such as pain when bathing and handling, and tenderness of the lower extremities, and later sponginess of the gums, we can be reasonably sure that the condition is scurvy. The edema of the legs in scurvy does not pit on pressure as in nephritis, but has a boggy feel.

Purpura, hemorrhagica and simplex, should not be difficult to distinguish from scurvy, since in them there is no swelling of the shafts of the long bones, and therefore no subperiosteal hemorrhages. Incipient and abortive types of infantile scurvy are characterized by progressive anemia, and pallor, restlessness, and hyperesthesia.

#### *Prognosis*

As a rule infantile scurvy is not considered a disease with an unfavorable prognosis. This depends, however, on several factors, and the duration of the disease depends largely upon these same factors. If the case has been seen late in its history, or a wrong, or no diagnosis, has been made, and consequently no antiscorbutic treatment given, we may find the symptoms in such an aggravated state, or advanced stage, coupled with anemia, malnutrition, exhaustion from strain on the nervous system due to the pain, also from serious subperiosteal hemorrhages or hemorrhagic conditions in other parts of the body, that the child will not have power to recover. Any complicating or intercurrent disease, such as pneumonia, enteritis, or cardiac failure, may turn the scale and bring about a fatal termination. There is little doubt but that many cases of infantile scurvy are fatal but are not reported as scurvy, from the fact that the disease has not been recognized.

When a correct diagnosis has been made and proper dietetic treatment given the improvement is marvelous. Within a few hours a child in a seemingly hopeless condition, with apparent paralysis, is transformed into a smiling, happy, wriggling and kicking little bundle of humanity.

## ADVANCES IN DIAGNOSTIC METHODS

BY JOSEPH H. BARACH

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*Hematology.*—In hematology, as one glances over the work done during the past few years, he sees that in morphological studies of the blood, comparatively few advances have been made.

It is not at all likely that the blood in the various diseased states has so little to offer; I believe rather, that it is because our attention and energies have been distracted into other channels. That this is manifestly true, is shown by the fact that there are so many questions in hematology to-day that actually go a-begging to be answered.

One of the foremost of these questions is, "what is the origin of the large mononuclear cell of the blood?" Is it a large lymphocyte having the same origin as the small lymphocytes; is it an old or a young cell; or does it emanate elsewhere than in the lymphatic system?

Pappenheim and other investigators claim that it is of lymphatic origin; Ehrlich and his followers claim for it an extra-lymphatic origin. This large mononuclear cell greets us and stumbles us every time we make a differential count.

From my own observations and being biased by the known pathology of the day, I am rather inclined to believe that it is intimately associated with the lymphatic system. I believe this because we find an increase of these cells more frequently in conditions in which the lymphatic system is known to be involved. I am willing to be wrong in this view, however, when decisive proof of its origin is offered.

The same unknown origin is true of the transitionals.

Nor is the meaning of eosinophilia clearly understood. My reason for bringing into consideration the origin of these cells, is because I believe that their presence in abnormal numbers is of more diagnostic value than is at present conceded to them.

Not only the presence of certain cells in abnormal numbers, but in many diseases I believe that there takes place the evolution of a definite blood cycle.

In my work on the "Morphology of blood in pertussis,"<sup>1</sup> I found a typical cycle to occur, and this is of considerable diagnostic value.

At the onset of the disease there is a marked leucocytosis with increase of all the forms. This is followed by a lymphocytosis. After the small lymphocytes have reached their greatest number, the large lymphocytes or large mononuclears reach their height. Bilobed small lymphocytes, spoken of by Ehrlich as Reiders cells, and degenerated large mononuclears are frequently seen. Later there is a gradual decrease in the leucocytes and a return to the normal differential count, except for a mild eosinophilia, which may persist for months. These findings were corroborated by Kolmer<sup>2</sup> one year later, and since then by various investigators.

As a diagnostic method, it has proved to be of the utmost value, and I can say that of the many examinations which up to the present time I have made for others and for myself, for the diagnosis of this disease, I have thus far been fortunate in a correct conclusion in every instance. It is needless to remark that early diagnosis in this, as in all diseases, makes prophylaxis possible.

I believe we are at present on the verge of a forward step in hematology which will lead us to a proper interpretation of eosinophilia. During the past winter, when carrying out some experimental work on "Anaphylaxis and asthma,"<sup>3</sup> I was much impressed by previous observations and in my perusal of the literature, with the concurrence of an eosinophilia in practically all the conditions which are at present classed as manifestations of anaphylaxis.

Since then a valuable collaboration of the evidences on this point has been made by Moscovitz,<sup>4</sup> and the literature abounds with records to substantiate that contention.

I have repeatedly found marked eosinophilia in asthma, in tuberculin reactions, in poisoning from sea foods, and in urticaria; all of which conditions seem explainable as anaphylactic phenomena. Another advance in hematological diagnosis came with the finding of the embryonic parasite of the *trichinella spiralis* in the blood. The first case was reported by Herrick and Janeway<sup>5</sup> in March, 1909. Two months later, at the South Side Hospital, I recovered the parasite from the blood of a suspected case. This is the second case in literature;<sup>6</sup> and since then many more have been reported.

Of late it has been shown that not even a venepuncture need be

performed, but that the parasite may be found in a drop of blood taken from the lobe of the ear as in the ordinary blood count.

Since the parasites are at most not very plentiful in the blood, one would, of course, be more apt to find them in larger amounts than is easily taken from the lobe of the ear.

A distinct diagnostic feature of this disease is the high eosinophile count, which in the light of anaphylaxis, is the result of the human body having been inoculated by the foreign protein substance of the *trichinella spiralis*.

*Noguchi-Wassermann Reaction.*—As a branch of hematology we have serology as a diagnostic method.

The most prominent advance in the comparatively new science serology has come with the advent of the Wassermann reaction. As has been explained here by others, its reaction depends upon the presence of a syphilitic antibody in the blood serum which prevents destruction of the red blood corpuscles used in the test. With normal blood serum and when the syphilitic antibody is not present, the red cells in the tube are destroyed and their hemoglobin goes into solution.

Noguchi of the Rockefeller Institute has modified and simplified this test; in fact he has improved upon it. His modification, now two years in use, has been carried out under his direction in over 10,000 cases, and as he says in the summary of a recent article:<sup>7</sup> "It is somewhat more sensitive than the Wassermann, but not so sensitive as to endanger its diagnostic value." This test also has a quantitative value.

I have used this reaction 325 times in private patients whose histories I took and examined, and have nothing but praise for it. A test that shows a positive reaction, say as long as 19 years after the original infection, and at a time when there are no gross external evidences of the disease, is one the like of which is devoutly to be wished for in medicine.

For a positive diagnosis of the disease, this reaction is of decisive value. It is surprising to find how many patients suspected of having syphilis have been in the past treated with mercury for short periods, and in which subsequent events reveal that they probably did not have the disease, as is shown later when they repeatedly give negative reactions. This in itself is a great step forward.

In treatment, when carrying out the reaction for physicians who have been treating these patients since the time of the original infection, I have always found in discussing the result of the reaction, that the physician in charge could retrace the course of the disease and satisfactorily correlate the result.

Those patients who gave positive reactions, either were careless in their treatment, they were alcoholics, or were refractory to treatment. Those who took the medicine well and regularly, and lived sanely, showed negative results. The test seems to have a quantitative value. In mild cases, I see milder reactions, and vice versa.

In 50 cases treated with Talvarosan, I have in most instances found a partial reaction after the first injections, and in nearly all up to the present, a completely negative reaction after the second injection. These findings are much the same as those reported by others of larger experience.

The test requires a reasonable amount of laboratory experience; it demands a refinement of technic and great precaution as to the reagents used. In passing, it should be noted that the reaction may be negative until about the 6th or 7th week from the time of infection; apparently before the antibodies have yet developed. In this respect it is not unlike the behavior of the Widal reaction in the early stage of typhoid fever. The reaction may also be found negative in late tertiary cases. I have found it so, in tabes, in parietic dementia, and in one case of syphilitic osteitis.

Active specific medication with mercury or large doses of potassium iodid may interfere with the reaction. I should say that 2 and preferably 3 weeks of abstinence from treatment is advisable.

In the proper treatment of syphilis it seems that this diagnostic and control reaction will hereafter be indispensable.

As one observes these patients, reflecting upon the history of their disease, their present conditions, and comparing those evidences with the result of the serum reaction, the thought must come to him of "how many cases of locomotor ataxia, parietic dementia, cerebral syphilis, and inherited syphilis may have been prevented had we known of this diagnostic method in the past."

Indeed, I think that since syphilis is a disease which to us as a people is of social and economic importance, and knowing full well that it is a curable disease, it would be a move in the right direction

if free laboratories were established for the carrying out of this reaction, as an aid to proper diagnosis and treatment.

What would perhaps be expensive at first would be highly economical later, when we consider the number of paralytics, demented, and unfit that trail in the path of the triponema pallidum.

The discovery and recognition of the triponema pallidum as the germ of syphilis was an event in the history of medicine. This spirochete is seen vividly with the dark ground illuminator; it is well shown by various staining methods, and can be demonstrated with India ink. Permit me at this time to reiterate my former warning against the use of the common India inks<sup>8</sup> by those who have not previously seen the triponema pallida with the dark ground illuminator or one of the recognized staining methods. A mistake in the diagnosis of syphilis is too serious a matter to be decided by the apparent depth and number of undulations in a twisted tendril.

*Tuberculin Reaction.*—Another great advance in diagnostic methods came with the tuberculin reaction. The first words to be said of this reaction, are that it occurs only in patients who have at some time been infected with tubercle bacilli. The tuberculin reaction is one of the anaphylactic phenomena in which the organism responds to like proteins. The test is of greatest differential diagnostic value in infancy and early childhood. After that, it is also of unquestioned aid when its interpretation is combined with experience and fair judgment.

My reason for bringing this topic in this consideration is not because all men are not familiar with the meaning and value of the test, but rather because I believe the general practitioner has not yet become intimately acquainted with it as a means of diagnosis. Metaphorically speaking, someone has likened the tuberculin test to hunting for a leakage of gas with an open flame. I believe this simile to be overdrawn, and that the average practitioner uses better judgment.

The most important question to-day is: "Which is the safest and most reliable method of carrying out this test?" There are in vogue at present, the dermal, intradermal, subdermal, and conjunctival methods. Each method has its own votaries who are necessarily influenced by their own experiences. The last words on the method to be preferred under each circumstance or at all times, have



not yet been said. The objection to the conjunctival method is possible injury to the eye. The objection to the subdermal method is severity of reaction with aggravation of diseased areas. The objection to the dermal and intradermal methods, is hypersensitiveness.

During the past summer, I administered over 200 subdermal injections for diagnosis. I pursued my way cautiously, and in one case at the third injection, I administered as much as 10 milligrams to a boy 16 years old. Having watched these cases carefully, I aver that not in any one instance was there any damage done. From my own experiences I therefore prefer the subcutaneous method.

Hamman and Wolman of Johns Hopkins in a study of 1500 cases,<sup>9</sup> say that they have never seen an increase of physical signs in the lungs of mild cases from subcutaneous injections; although they avoid giving it to patients with large lesions. For the diagnosis of incipient tuberculosis they have more confidence in the eye test than the subcutaneous, in that it is not "all sensitive" and when carefully used, is as safe as any other method.

In interpreting the reaction, we must take into consideration the local reaction, rise of temperature, and constitutional manifestations. Not infrequently have I seen children complain of nausea and intra-abdominal pains following an injection; this pointing probably to intra-abdominal tuberculosis, which is otherwise undiscoverable.

No one ever speaks of the tuberculin reaction without saying that just as important, is the physical examination, history, sputum examination, etc. In my own observations, out of 50 physical examinations in well children followed later by tuberculin tests, I found only 3 cases which reacted to the test, that I had previously recorded as being free from any discoverable trouble.

A number of years ago, much was said about false tuberculin reactions. To-day, I believe we can eliminate the doubt on this point to a considerable degree, by a differential blood count which shows a variable degree of eosinophilia.

The reader will note that in this brief communication by which I hoped rather to entertain than instruct, I have confined myself to remarks dealing with laboratory methods proper and those methods which have but recently left the laboratory.

Thus it really is in diagnosis to-day; most of our advances are coming to us through the laboratory door, and the problems over

which the ultra scientific workers are pondering this day—may tomorrow be the valuable assistants of the bedside practitioner.

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DIFFERENTIAL DIAGNOSIS BETWEEN TRUE TUBE-CASTS AND PSEUDO-CASTS IN URINE

By LOUIS HEITZMANN

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While it is generally conceded that the presence of true tube-casts in the urine is of great importance, it is an unfortunate fact that too little significance is placed upon the differentiation of such true casts with cast-like formations, which may be derived from any part of the genito-urinary tract, may be seen in perfectly normal urine and be formed after the urine is voided. Many physicians who examine urine microscopically are liable to call any formation which at all resembles a cast a tubular cast, and forget that there are many harmless features resembling casts in urine. In order to determine the presence or absence of any true casts low-magnifying powers should never be used; we should examine the specimen with a power of no less than 400 to 500 diameters, and whenever formations resembling casts are found they should be thoroughly analyzed before a diagnosis is made.

True tube-casts cannot be present without some pathological

lesion in the kidney, even if only slight. They consist of coagulable elements of the blood which gain access to the renal tubes through pathological lesions of the latter, and any free or detached products of the tubules becoming entangled in this coagulable material assist to form the mold of the tubules. True casts are therefore the products of an exudation from the bloodvessels, probably albuminous in character with the addition of that of the swollen, distintegrated epithelia. Such formations can therefore never be found in the urine of perfect health, and in such cases where true casts were temporarily present in apparently healthy individuals, a transitory hyperemia of the kidney undoubtedly existed at the time the urine was voided. Nevertheless it is constantly claimed that hyaline casts, which are the most common of all true casts, may be found in normal urine, and a few observers have even maintained that they are found in practically every specimen and are certainly met with in the urine of persons in whom no albumin or other sign of renal inflammation had ever been observed. That hyaline casts may temporarily be found in apparently perfectly healthy persons after the ingestion of irritating foods or alcohol as well as after prolonged and violent exercise, yes, even after prolonged and excessive massage, cannot be denied, but in all such cases other elements of at last temporary irritation or congestion must also be present. True casts can never be found in urine without the presence of other pathological elements, such as red blood corpuscles, leucocytes or pus corpuscles, and epithelia from the uriniferous tubules even if only in small amounts. Alcohol and irritating articles of food may undoubtedly produce a renal congestion at times, and then a few hyaline casts may be seen; these, however, are only temporarily present and disappear as soon as the cause is removed.

In almost all, but not all cases where true casts are found, albumin is present in at least small or moderate amounts; but there are undoubtedly cases in which the amount of albumin is so minute as to be overlooked at times. On the other hand, albumin may be present in fairly large amounts without any pathological change in the kidney; such albumin being found in different inflammatory conditions in the genito-urinary tract. It is therefore plain that it will not suffice to rely upon the chemical albumin tests for the diagnosis of a nephritic condition; careful microscopical examination alone

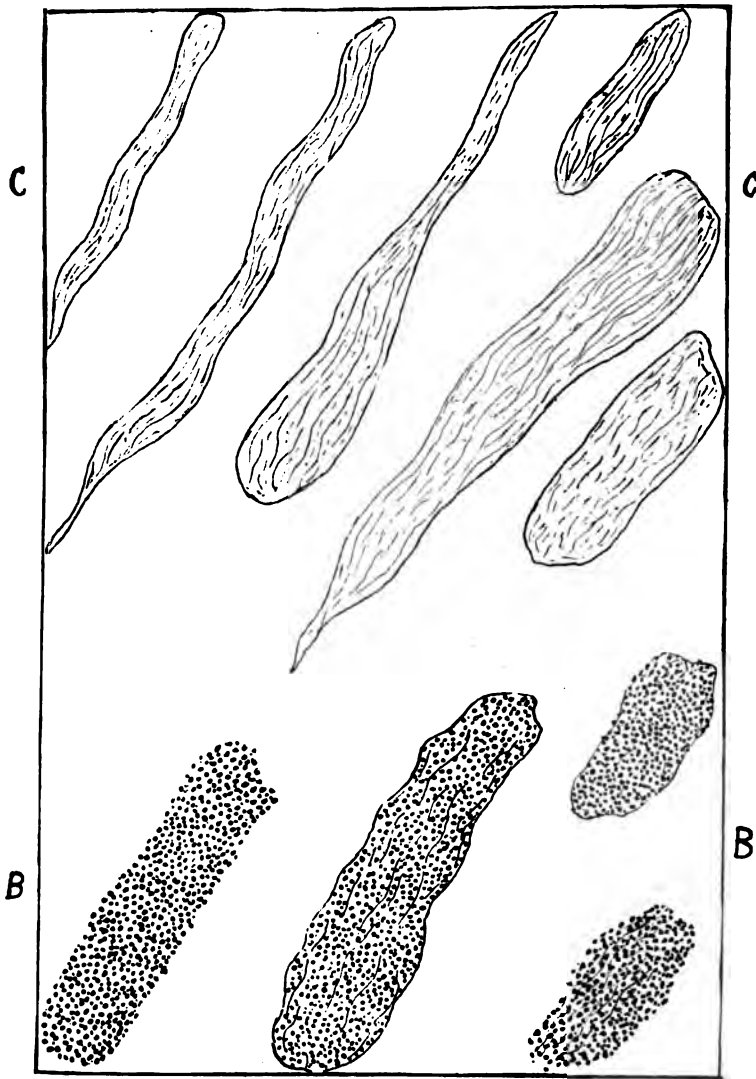


Fig. 1. *Pseudo-Casts*. Magn. = 450

C = Cylindroids or Mucus-Casts.  
B = Bacterial Casts.

will clear up a case and help us toward the formation of a correct diagnosis.

Of all the six varieties of tubular casts, which may be found in a sediment of urine, the two most frequently reported as being present are: First, hyaline, and second, granular. It makes little difference whether any other features showing a morbid or abnormal condition are present; as soon as structures resembling hyaline or granular casts are seen, a diagnosis of a parenchymatous or diffuse nephritis is made. This is done all the more readily if a chemical examination has shown the presence of albumin either in small or large amounts. It is, as a rule, forgotten that there are different structures resembling casts, but not necessarily formed in the kidney at all, or even extraneous, i.e., having been admixed with the urine after it had been voided. There are especially two forms found in the urinary sediment, more or less constantly, which are easily mistaken for hyaline and granular casts. These formations are cylindroids and bacterial casts. (see Fig. 1.) Cylindroids or mucus-casts may resemble true hyaline casts in their outline to a considerable degree although they can in many, though not in all cases, be differentiated from them by the irregular contours, their tapering ends and their more or less striated structure. Such cylindroids are nothing more or less than conglomerations of mucus in the form of casts, being mucus-threads. Mucus is present in every urine in varying amounts, and such threads can easily become conglomerated so as to resemble casts, yet, they may be derived from the bladder or ureter or from the sexual organs and be absolutely independent of any renal lesion. Although cylindroids are not infrequently long and often twisted and folded, they may be short and their outline be perfectly regular, so much so that at the first glance they resemble hyaline casts completely. However, before such a diagnosis is made, it is important to note whether the formation is really structureless or very finely granular, or whether fine threads or fibrils do not run through it. In the latter case, the diagnosis of true casts should never under any circumstances be made. Hyaline casts are usually structureless, although at times a few pale granules may be noticeable in them; these are not sufficiently marked to allow of their classification as granular casts.

Just as important is the differentiation of true granular from

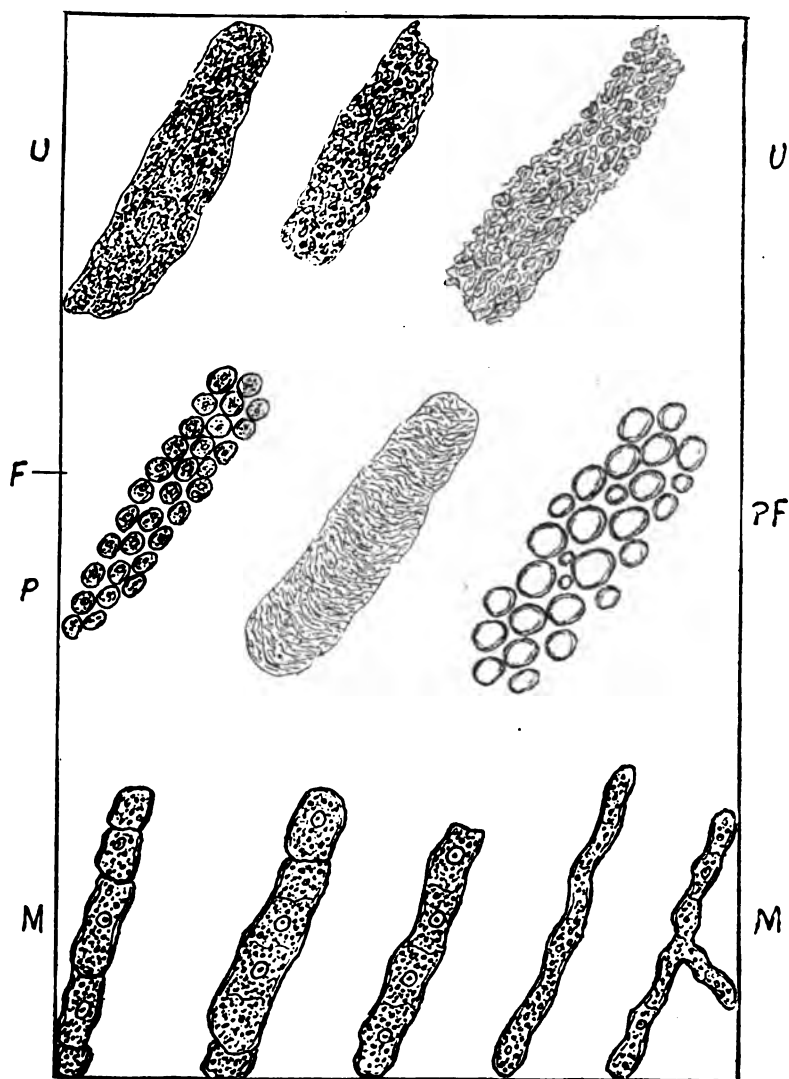


Fig. 2. *Pseudo-Casts*. Magn. = 450

U = Urate Casts.  
 F = Fibrin Cast.  
 P = Pus Cast.  
 PF = Pseudo-Fat Cast.  
 M = Mycelia.

false or pseudo-casts resembling them. It is especially the so-called bacterial cast which is mistaken for the true granular variety. Microorganisms of putrefactive character are more or less constantly present in varying numbers in urine a number of hours old. These organisms either were not present at the time the urine was voided, or, at any rate, need not be derived from the urinary tract, and therefore have no significance. In the urine of females such organisms may be seen in very large numbers, being constantly present in the vagina, and becoming mixed with the urine during voidance. In warm, and especially moist weather, they multiply rapidly after the urine is voided. It is especially putrefactive micrococci which conglomerate upon mucus-threads or cylindroids, and then resemble granular casts. It ought not be difficult to differentiate the two. Bacterial casts have only an indistinctly defined pale outline, vary considerably in size, are more or less irregular and are formations crowded with dots or micrococci; while true granular casts have a more or less distinctly marked outline and contain granular matter irregularly filling the cast and usually differing from the dots forming the micrococci. Bacterial casts have no significance whatever, except when found in perfectly fresh urine as an aid to diagnosis, since they are then most likely to be seen in any severe inflammatory, suppurative or ulcerative lesion. This lesion may be present in any part of the genito-urinary tract. In order to clear up their diagnosis positively it may, in exceptional cases, be necessary to add one or two drops of some strong mineral acid or alkali, to which they have a pronounced resistance.

Another formation which not rarely resembles a narrow granular cast is the mycelium thread. Mycelia (see Fig. 2) are parts of mould fungi or hyphomycetes, which may develop secondarily in an acid urine, especially in warm weather. When urine is received for examination it is not infrequently a number of hours old. In warm weather mould readily develops in acid urine. While mycelia are usually very narrow, long, somewhat irregular and even branching, they may at times be shorter, broader and have the configuration of tubular casts. They can be readily distinguished from granular casts by their higher refraction, greater irregularity, coarse, irregular granulation, and by the presence of globules as well as by their frequent segmentation. The globules which they contain are spores

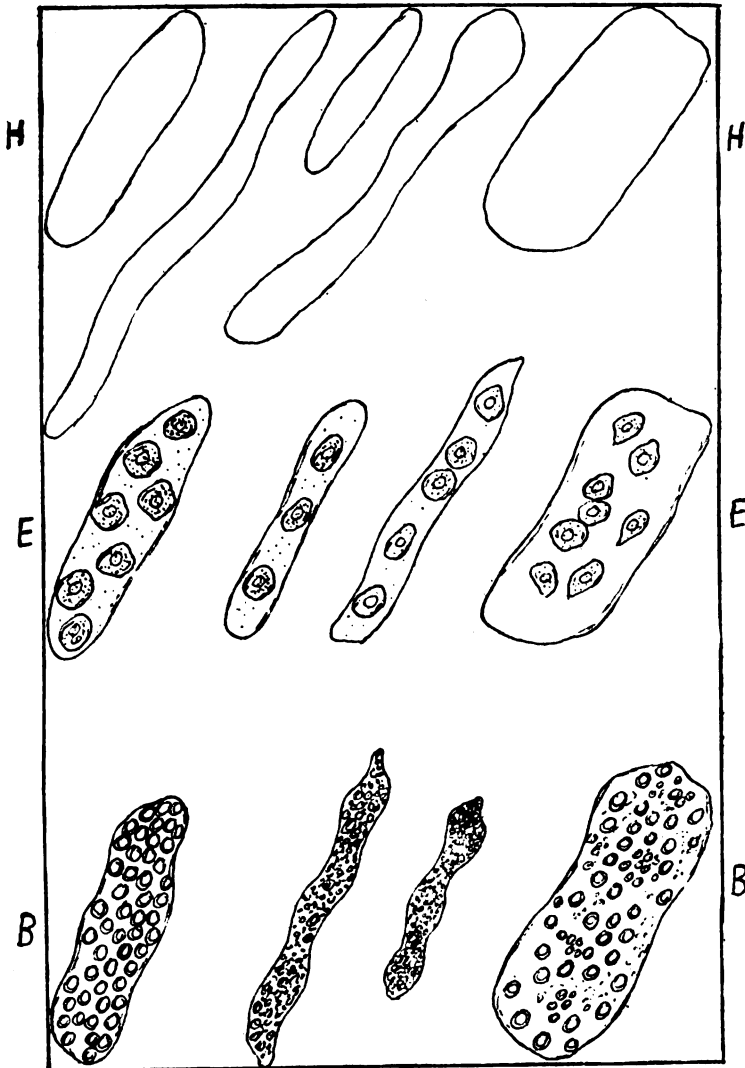


Fig. 3. *True Tube-Casts*. Magn. = 450

H = Hyaline Casts.  
 E = Epithelial Casts.  
 B = Blood Casts.



or conidia, and the latter are also seen in these cases either irregularly scattered throughout the microscopical field or lying in small groups. Conidia vary in size, though they are mostly small refractive globules containing a central dot or vacuole.

Besides the formation so far mentioned, other false or pseudo-casts can also be found and may lead to a mistaken diagnosis. Of these the most important are urate casts, pus casts, pseudo-fat casts and fibrin casts. (see Fig. 2.)

Urate casts may consist of conglomerations of ammonium urate, but are usually formations of sodium urate resembling granular casts. They have, however, the characteristic yellowish-brown color of sodium urate, and in many cases show no outlines. When the masses of sodium urate are not heavy, mucus-threads or strings of mucus can be distinctly seen underlying or surrounding them, and then their resemblance to true casts is more marked. In all these cases variously sized, irregularly scattered masses or groups of light or dark brown, fine, amorphous granules in a moss-like arrangement, i.e. granules of amorphous urates, are always present.

By the term pus casts we understand cast-like formations of pus corpuscles usually conglomerated upon mucus. The pus corpuscles may be massed together without any visible outlines, or they are more loosely arranged and lie upon cylindroids. Such formations may be derived from any one of the genitourinary organs in which an inflammation exists or they may be secondarily formed after the urine is voided. Pus corpuscles may, of course, also be found in varying numbers upon true tubular casts, but they rarely fill the cast completely, and other elements, such as epithelia or granules, are then almost invariably present too, determining the character of the cast.

Pseudo-fat casts are rare, but have been found in a few cases of lipuria. They consist of conglomerations of large fat globules of a very high refraction, and occasionally contain margaric acid needles. Again, extraneous fat globules may be found upon mucus-threads or cylindroids, but these have a yellowish color and vary considerably in size, so that their recognition should present no difficulties.

Fibrin casts may be found in cases of hemorrhage. These have irregular, more or less sharply defined contours, and are of a yellowish or brownish color. They consist of small, wavy, irregular fibers

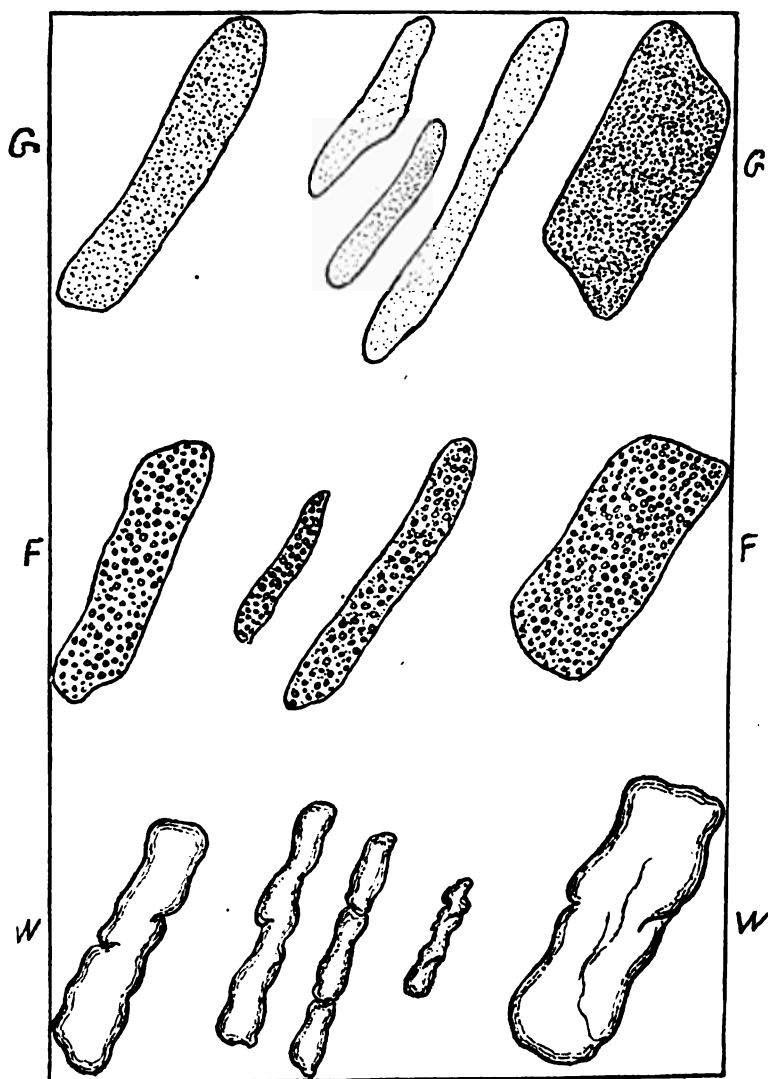


Fig. 4. *True Tube-Casts.* Magn. = 450

G = Granular Casts.  
F = Fatty Casts.  
W = Waxy Casts.

and never occur without the presence of characteristic strings or bands of fibrin.

At times extraneous fibers, such as cotton, linen, wool and especially silk may resemble casts in their outlines, and are undoubtedly occasionally mistaken as such by careless observers. The high refraction of these fibers alone should exclude them as well as their irregular contours and more or less characteristic structure.

True tube casts are of six varieties. These are:

1. Hyaline casts;
2. Epithelial casts;
3. Blood casts;
4. Granular casts;
5. Fatty casts;
6. Waxy or amyloid casts.

Generally speaking, the first three varieties—hyaline, epithelial and blood casts—are found in an *acute* parenchymatous or diffuse nephritis, while the last three—granular, fatty and waxy casts—are found in a *subacute* or *chronic* parenchymatous inflammation of the kidney. In the first few weeks of a nephritis granular casts rarely appear in the urine, fatty casts never, except in cases of intense intoxications, such as with phosphorus, arsenic or mercury, while waxy casts are always evidences of some chronic process.

All casts vary considerably in size in accordance with the portion of the uriniferous tubules from which they originate. The narrowest casts are formed in the narrow tubules, those of medium size in the distal convoluted tubules, while the largest are formed in the straight collecting tubules.

1. Hyaline casts (see Fig. 3) are pale, transparent formations of variable length, sometimes of considerable size, and not infrequently difficult of detection in the urine. Those from the convoluted and straight collecting tubules are usually more or less regular, though the latter may be very broad; those from the narrow tubules are occasionally tortuous or spiral, and at times exceedingly narrow and delicate. As a rule, these casts are structureless, but at times they contain a few pale granules irregularly scattered throughout the cast, not, however, sufficiently pronounced to allow of their classification as granular casts. Different formations, such as pus corpuscles or a few red blood globules or small groups of fat

globules in one part of the formation may be present upon the casts, but are accidental and do not alter the diagnosis. Now and then these casts may appear more solid and of higher refraction, though their hyaline character is undoubted, and they must not be mistaken for waxy casts.

2. Epithelial casts (see Fig. 3) are formed by the desquamated epithelia being deposited upon the hyaline casts, hence their general configurations are identical although they are rarely seen as long as some hyaline casts and are usually quite regular. They are of a higher refraction and are readily seen. The numbers of epithelia upon these casts vary considerably; at times no more than two or three epithelia are present, while at other times the cast is more or less completely filled with them. Sometimes desquamated epithelial tubes are found; these represent solid masses of epithelia of varying lengths in the form of casts thrown off from the tubules, and can hardly be called true casts, although they are usually classified as such.

3. Blood casts (see Fig. 3) show the presence of a hemorrhage within the uriniferous tubules, and, when seen in large numbers denote an intense inflammatory condition in the kidney. In children, however, their presence is of decidedly less grave import than in adults. The appearance of these casts varies considerably; they are not infrequently more irregular than the epithelial casts, their ends more or less rounded, and they may be either studded with a varying number of red blood corpuscles without changing their color, or, if they have been retained in the tubules for some time before they are voided, the blood corpuscles lose their shape, and the casts take on the appearance of dark, rust-brown, granular clusters with irregular, though quite distinct outlines.

4. Granular casts (see Fig. 4) are either perfectly regular and have sharply defined contours, or they are more or less curved, or appear curved at one side while they are straight at the other. Their ends are either rounded or partly broken, and they may be broader in one part and narrower in another,—a peculiarity especially pronounced in those from the narrow tubules. Their degree of refraction changes to a great degree, and they sometimes appear yellowish, at other times colorless.

The granulation of these casts differs pronouncedly, some being

coarsely granular, others finely granular, still others partly the former and partly the latter. In most cases granular casts are probably the result of a disintegration of the kidney epithelia, which commences after a varying length of time. In other cases the granules are the results of inflammatory disintegration of different tissue elements, which conglomerate upon previously formed hyaline casts.

In the majority of cases granular casts do not appear in the urine until a number of weeks have elapsed after the commencement of the inflammation, that is, when the inflammation has become subacute. In some severe cases, however, especially in children in whom a nephritis develops after contagious diseases, such as scarlet fever or diphtheria, they may be seen at the end of the first or the commencement of the second week after the first symptoms of the nephritis have set in. Too much attention cannot be called to the fact that in the greater number of cases hyaline and granular casts together do not appear alone without the presence of other casts, especially epithelial casts. Hyaline casts *always* denote an acute pathological condition, either congestion or inflammation, or at least an acute exacerbation of a chronic lesion. Granular casts, on the other hand, *usually* denote the presence of a subacute or chronic process. If these facts are kept in mind, and formations *resembling* hyaline and granular casts are studied more closely and more carefully before they are diagnosed as such, one of the most common mistakes constantly made in urinalysis would be done away with and better results obtained in ordinary urine examinations.

5. Fatty casts of the true tubular variety (see Fig. 4) are always secondary products of epithelial or granular casts, therefore their size and shape resemble these considerably. They contain a varying number of small, glistening fat granules and globules, which give to the cast a rather high refraction, the cast being either partially or completely filled with them. As they are secondary products of the granular protoplasm, it follows that, even when they are present in small numbers, the diagnosis of a chronic process is justified, the more so, the more completely they are formed. The commencement of the formation of fat globules can frequently be seen in both epithelial and granular casts, the granules becoming more glistening and highly refractive, and finally changing to globules. When the fatty casts are present in large numbers, they

always denote a pronounced fatty degeneration of the kidney. In exceptional cases a fatty degeneration may occur as a more acute process, but this is seen only in severe cases of poisoning with different substances, such as with phosphorus, arsenic and mercury.

6. Waxy casts (see Fig. 4) are different in their chemical nature from the other varieties of true tube casts; they are characterized by wavy, fluted contours, a high refracting power, a more or less yellowish color and a high degree of brittleness. They vary greatly in size, and are always more or less irregular on account of their frequently broken contours. Sometimes their wavy, fluted appearance is extremely pronounced, and they may show regular corkscrew windings. These casts appear only in intense chronic pathological conditions and always denote a waxy or amyloid or lardaceous degeneration of the kidneys. Waxy degeneration is found in tuberculosis, in syphilis and in different chronic suppurative and ulcerative processes.

In conclusion it can only again be pointed out that a diagnosis of the presence of true tubular casts in the urine should under no circumstances be based upon the findings of cast-like structures alone. Such structures must always be associated with other evidences of a pathological condition, such as red blood corpuscles, leucocytes or pus corpuscles and epithelia from the uriniferous tubules, before the diagnosis of a tube cast becomes admissible.

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## CYSTINURIA

By FREDERIC E. SONDERN

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True cystinuria is a rare condition; it does not give rise to any characteristic clinical symptoms unless it has formed calculi in the urinary tract and would generally seem to be a metabolic curiosity rather than a true clinical entity.

K. von Hoffmann in a collective review published three years ago, stated that 175 cases were on record; most of these were in young persons of which 85 were males and 45 females. In approximately 35,000 specimens of urine, true cystinuria has been met

with in but four cases, and one of the four presented symptoms referable to renal calculi, the presence of cystin in the urine in the others being discovered on routine analysis. Of the latter, one had an acute gonorrhea, the second was to be operated on for a lipoma of the neck, and the third had his urine examined as a precaution before applying for life insurance. In the three cases there were no calculi in the urinary tract as far as I could learn, there was no history of renal colic or tenesmus, but there seemed to be a distinct neurotic taint in all.

Horatio B. Williams in a recent article on "Protein metabolism in cystinuria" briefly outlines the clinical history of his patient. There was a history of syphilis, repeated attacks of muscular rheumatism and frequent gastric indigestion. The muscle pain was not quoted as a prominent feature. While most text-books mention cystin calculi as a variety in lithiasis, it seems difficult to find the clinical history in an actual case. For example, Israel in his "Surgical clinic of kidney diseases" published in 1901, speaks of cystin calculi and the fact that this substance is found mixed with other elements in some stones, but does not detail one case in his long list unless those composed largely of sulphur may be considered cystin stones.

Cystin is an amino-acid originating as an intermediary product in protein metabolism. It is not normally present in the urine, and when it occurs is an evidence of incomplete oxidation of proteid material. The inorganic sulphates in the urine are diminished and a relatively large amount of neutral sulphur is obtained on analysis. It was believed that cystin was a product of putrefaction in the intestine, a conclusion strengthened by the frequent presence of diamines (putrescin and cadaverin) in these specimens of urine. The recent publications by Loewy and Neuberg, Wolf and Shaffer and the quoted paper by Williams give the results of investigations of the protein metabolism in cystinuria. The chief practical object is the attempt to prove conclusively that cystin is not a product of intestinal putrefaction. The simultaneous presence of diamines (putrescin and cadaverin) is by no means constant, and even if they do occur in cases of cystinuria, Loewy claims that this would not necessarily indicate a common origin. Cammidge in 30 examinations in one case of cystinuria was able to demonstrate diamines twice only. Whether the other amino-acids such as leucin and tyrosin

occur in these cases is another important point; they have been found in some analyses and are declared absent in others.

Two analyses from a case of cystinuria in the service of Dr. M. Rehling in which there was repeated formation of large renal calculi, are appended:

	9. April 1911			30. April 1911		
Daily Amount of Urine	2500 c.c.			3200 c.c.		
Specific Gravity	1005			1007		
Total Nitrogen	8.120 grams.			10.304 grams.		
Urea Nitrogen	6.077	"	or 74.8% T. N.	7.779	"	or 75.5% T. N.
Uric Acid Nitrogen	0.151	"	or 1.9% "	0.165	"	or 1.6% "
Ammonia Nitrogen	0.280	"	or 3.4% "	0.187	"	or 1.8% "
Creatinin Nitrogen	0.208	"	or 2.6% "	0.251	"	or 2.4% "
Rest Nitrogen	1.404	"	or 17.3% "	1.952	"	or 18.7% "
Total Sulphur	0.700	"		0.887	"	
Inorganic Sulphur	0.412	"	or 58.9% T. S.	0.546	"	or 61.6% T. S.
Ethereal Sulphur	0.032	"	or 4.6% "	0.055	"	or 6.2% "
Neutral Sulphur	0.256	"	or 36.5% "	0.286	"	or 32.2% "
$\frac{\text{Total Sulphur} \times 100}{\text{Total Nitrogen}} = 8.6$			$\frac{\text{Total Sulphur} \times 100}{\text{Total Nitrogen}} = 8.6$			
$\frac{\text{Neutral Sulphur} \times 100}{\text{Total Nitrogen}} = 3.2$			$\frac{\text{Neutral Sulphur} \times 100}{\text{Total Nitrogen}} = 2.8$			

The above shows the usual disturbances in metabolism, namely the relatively large amount of Rest Nitrogen which includes the amino-acids, and the relative excess of neutral sulphur. It is not necessary to go into the details concerning the experimental feeding of cystinurics, as that would mean a review of much chemical data without repayment in practical clinical result. A conservative opinion based on personal observations and the published research work would be, that cystinuria is the outcome of a faulty amino-acid oxidation based on faulty albumin catabolism. It is in a way not unlike the fault in protein metabolism found in some varieties of toxemia which have recently had much attention. In these cases gross and microscopic lesions are found in the liver and the faults in the chemistry of the urine are apparently referable to faulty hepatic function. It is not improbable that the disturbed protein metabolism causing cystinuria may also rest on a similar fault in hepatic function, the cause of which is unknown.



## SOURCES OF ERROR IN DIAGNOSIS IN SENILE CASES

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In an article on diseases of old age by A. Seidel, of Berlin, which appeared in Wood's Monographs for March, 1890, the author makes this statement: "Mistakes are made daily in the treatment of the aged, and the normal mortality of advanced life is considerably increased as a consequence of the hitherto neglected study of the anatomical and physiological peculiarities of the senile organism." This holds as good to-day as it did twenty years ago. The neglect of the study of geriatrics, the branch of medicine dealing with senility and its diseases, and the general lack of a scientific knowledge of the senile organism in health and in disease are responsible for many errors in diagnosis and treatment, errors that are buried in the graves of their victims. The conservative medical profession does not take kindly to radical innovations which upset deep-rooted dogmas and views, and while it will go hysterical for a time over some new well exploited drug, it requires a more powerful iconoclast than I am to destroy the prevailing view that senility is a pathological state of maturity, that the senile degenerations that are involved in the process of involution are pathological processes, that the manifestations of senility are symptoms of disease. Senile degenerations and the altered functions resulting therefrom are, however, natural, normal and physiological at that period of life. If we accept this view and look upon senility as the pediatricist looks upon childhood, as a distinct physiological entity to be considered apart from maturity we will get a new conception of disease in old age. Disease in old age is not a deviation from the norm of maturity, for in senility every organ and tissue depart from that norm, such departure being an integral part of the normal process of senile involution. Neither is disease in old age the result of a pathological process in an organ or tissue such as we find in maturity, complicated by senile degeneration. In disease in old age there is a perversion of the functions that are normal to the degenerating organ or tissue, a pathological process in a degenerating body.

Many of the senile degenerations resemble in their gross appearance and minute anatomy the pathological changes found in diseased organs in maturity. The senile contracted liver resembles the liver of cirrhosis, the senile kidney resembles the kidney of interstitial nephritis. The dilated stomach with its thin walls, wasted glands and diminished blood supply resembles chronic gastritis with dilatation. This will explain the frequent postmortem findings in senile cases of cirrhosis, nephritis, gastritis and other pathological conditions which gave no symptoms during life. This brings us to the first and most prevalent source of error in diagnosis in senile cases, namely, mistaking the normal anatomical and physiological manifestations of senility for disease conditions which they resemble. I will give a typical case. The patient, a man past 70, was for many years a packer in a department store. About two years ago he began to complain that he got a "crick" in the back whenever he stooped and an ache upon recovering himself. Long before this he complained of aches and pains in the joints, growing weakness and a generally tired feeling all day. He was certain he had rheumatism and the physician connected with the store corroborated the diagnosis. After having been treated for several months for rheumatism without the slightest benefit, he went to another physician who, finding that the man had been treated for rheumatism without relief and that he had pains across the small of the back and occasionally had difficulty in passing urine, examined the urine. He evidently found albumin, for he told the patient that he had Bright's disease. His treatment gave no better results than the other and the man went to a dispensary where he was told that he had cirrhosis of the liver with an enlarged liver. I saw him a few weeks ago. The pains in the back were due to the ordinary senile changes, waste of muscle and hardening of the intervertebral discs, the pains in the joints were due to hardening of the ligaments and roughening of the articular cartilages, and the pains in his feet were due to broken-down arches. The only symptom of Bright's disease was the albuminuria, and as there were no casts this was merely a symptom of a normal senile kidney such as is found in many senile cases. There are contradictory views as to the significance of albuminuria in old age, some believing that it is a negligible manifestation of senile kidney, others holding to its importance as a positive symptom of ne-

phritis. In one of my cases, a woman now past 80, there has been a persistent albuminuria for the past ten years, in another case a diagnosis of Bright's disease was made upon the repeated finding of albumin, yet after five years there was no further development of the disease nor any change in the character of the urine. Such cases have destroyed my faith in the value of albuminuria as a diagnostic symptom, and unless associated with casts I consider it a negligible manifestation of senile kidney. The difficulty in passing urine was due to an enlarged prostate. I don't know how the diagnosis of cirrhosis was reached, unless it was upon the finding of the border of the liver in the left hypochondrium. This may have given the impression of an enlarged liver, but percussion showed a contracted liver, its abnormal position being due to an exaggerated senile kyphosis caused by the man's vocation and producing a change in the relations of the diaphragm to the chest and abdomen. In this case we see how the manifestations of senility may simulate diseases and be treated improperly.

Another source of error in diagnosing senile cases is this: the manifestations of senility may be so pronounced as to mask the symptoms of a serious disease. In senility the severity of symptoms bears no relation to the severity of the disease and mild symptoms are readily overlooked when similar symptoms of senile degeneration are marked. I will give two examples of such errors in diagnosis. A man 74 years old, had had senile emphysema and bronchorrhea for several years, the dyspnea being the only distressing symptom. The family physician had been called in a few days before the patient died because the dyspnea was more severe than usual and the old man was becoming rapidly weaker. This and a temperature ranging from 99.6 to 100.4 deg. F. in the mouth were the only exceptional symptoms. The attending physician permitted me to see the case and we found the following condition. Upon percussion and auscultation the ordinary signs of emphysema and chronic bronchitis were noted; the respirations were about twenty a minute, not rhythmical, severe dyspnea; no pain anywhere. Other symptoms present had no bearing upon the purpose of this paper. There was an occasional break in the rhythm of the respirations lasting several seconds during which time there was relief from the dyspnea and the respiration was shallow and rapid. In one interval of fifteen

seconds there were twelve respirations corresponding to fifty a minute. This gave us a clue to the cause of the temperature and rapidly failing strength. During such an interval spots of dulness and absence of râles over such spots were found confirming the suspicion of pneumonia. The second case was that of a man whom I had treated a few times for dyspepsia and constipation. He had no teeth, yet with senile perverseness he insisted upon solid food in good sized morsels which he would swallow unchewed. He had an irreducible inguinal hernia and wore the same truss for over twenty-five years. One day his daughter told me his abdomen was swollen and while he did not complain she had given him a cathartic which did not work. Upon examination I found the abdomen swollen and tympanitic, there was no marked pain anywhere, no localized swelling and no temperature. Neither an enema nor a drastic cathartic produced any results, and fearing an intussusception I sent him to the hospital. Laparotomy disclosed a strangulated hernia. The man's weakened mentality made him oblivious to the pain, which was probably not severe owing to changes in the terminals of the sensory nerves, and the chronic constipation with occasional enlargement of the abdomen through flatus masked the symptoms of the grave condition present.

A third source of error in diagnosis is due to atypical cases and ill-defined symptoms. Grave diseases are often present yet present symptoms so obscure as to be unnoticed or uninterpretable. The following is a typical case of this category. The patient was past 80 years of age and had lived for twenty years or more in quiet, uneventful retirement in Astoria. Though mentally and physically decrepit he boasted of his good health and refused medical treatment for the minor ailments from which he suffered. A nephew who requested me to see the old man said the patient did not want a physician as he had no pains, did not feel sick, only tired and sleepy, too tired to get out of bed. The family had noticed his rapidly growing weakness and a change in his appearance. When I reached the house I found him suffering from pulmonary edema, from which he died a few hours later. Close questioning brought out some facts which might have been of service in determining the diagnosis before the edema set in. The skin was cool but the patient had frequently asked for wine, which was given to him, the family mistaking what

was evidently thirst due to fever for a desire for stimulants. There was a slight cough to which the family paid no attention. It was noticed that he spoke in his sleep, probably a low muttering delirium, showing brain involvement. The rapidly increasing weakness should have attracted attention. The family noticed that the patient occasionally struck his chest as if he tried to loosen some mucus that was sticking in a bronchial tube. This symptom may have some value as I have noticed in a few cases. Here was a case giving no clearly defined symptoms of pneumonia; yet had the symptoms present been noticed and properly interpreted in time, the diagnosis might have been established and treatment instituted. In the case of a retired printer 73 years old, there was lead cachexia and senile dementia. For several weeks before his death he slept from twelve to fifteen hours a day and during the last week it was a comatous sleep from which he could be roused with difficulty only. There had been no indications of Bright's disease until two days before he died, when albumin and casts were found in the urine; the following day there was a uremic convulsion followed by coma which lasted to the end. In the case of a spinster aged about 80 years, who died a few weeks ago, there was general exhaustion and senile dementia. Death followed an exhausting diarrhea for which I could give no explanation. In many cases similar to these I believe our lack of knowledge of the senile organism in disease is responsible for faulty diagnosis, improper treatment and death.

I will mention one more source of error in diagnosis which is sometimes met with. We have in maturity certain symptom-complexes which, taken collectively, are diagnostic of certain diseases. There are no such symptom-complexes in senility, and we must trace each symptom to its source before we can determine its relation to the suspected disease. The following case exemplifies this. A factory owner aged 65 years had led a gay life up to his fiftieth year, when his father died and left the factory on his hands. After that he attended strictly to business, taking personal charge of several hundred employees. Lately he had been complaining of headaches, occasional attacks of vertigo, insomnia, irritability, weakness of sight and hearing, dyspepsia, palpitation of the heart, shortness of breath, occasionally swelling of the ankles and he said he was becoming weak and emaciated. Upon examination we found a hard, rapid

pulse, cardiac hypertrophy, and albuminuria. He had been treated for Bright's disease, the symptoms being a perfect picture of interstitial nephritis, except that there were no casts. While functional derangements in old age will involve allied organs and their functions as in maturity, I have learnt to disregard the tout ensemble produced by many symptoms taken collectively, and instead of this I take each symptom and determine its cause and value. This case showed the advantage of such a course. The irritability was due to neglect of his business, and it disappeared the first day he returned to his factory. The insomnia was due to the same cause. The shortness of breath was due to an emphysema from which he had been suffering for several years. The dyspepsia was due to improper food and irregular meals. The presbyopia and slight deafness were due to senile changes in the organs of sight and hearing. The palpitation of the heart was due to hypertrophy, the headaches and vertigo were probably due to arteriosclerosis, the wasting and weakness were due to the dyspepsia and worry. He gained in weight and strength upon a proper diet after he returned to his business. The edema of the ankles was probably due to impaired circulation, and as it was noticed only after he had stood for several hours in one position it may have been a hypostatic edema. I don't know if this term is orthodox but you will understand what I mean. The only symptom now left pointing to kidney involvement was the albuminuria and this in the absence of casts is unimportant and not diagnostic of nephritis. Here we have four interrelated senile conditions, emphysema, cardiac hypertrophy, arteriosclerosis and contracted kidney, two independent senile degenerations, of the organs, of seeing and hearing, and an accidental disease, dyspepsia. This was really a case of precocious senility brought on through fast living during the earlier years of maturity followed by excessive business activity later. I will add that excessive business activity will produce early aging as surely as fast living.

TUBERCULOSIS OF THE SPINE; THE DIAGNOSIS AND  
DIFFERENTIAL DIAGNOSIS

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Tuberculosis of the spinal column, like most other orthopedic conditions, seems to offer to the practitioner many difficulties in making a diagnosis early in the condition, when a proper diagnosis is most essential to the patient, owing to its bearing on the end result. The laity can diagnose the hunchback. In this brief paper the attempt will be made to place before the reader the salient points to be looked for in making a diagnosis of tuberculous disease in the various portions of the column early in its inception. This diagnosis will be based on general and local manifestations of the disease and these symptoms will also be subjective and objective. To elicit symptoms of any disease the examination must be thorough and painstaking, otherwise one will overlook many things on which a proper diagnosis may be based. In examining for the disease the very first thing to do, after having obtained a complete history of the case and the subjective symptoms complained of, is to strip the patient for an objective examination. Only in this way can one avoid the possibility of overlooking some important point, the omission of which may cause a wrong diagnosis to be made. The history should elicit the general symptoms of pain—a sharp pain, not at all constant but caused by sudden jars, missteps or other unexpected spinal movements. This pain may be in the spine itself or it may be referred to any of the soft parts of the body, the location depending upon the site of the disease in the spine. And in this regard it must be remembered that the exit of the nerves from the spine is on a somewhat higher plane than the parts they supply. Rarely does direct palpation or pressure cause pain, except in rather acute cases but it may give a sensation of soreness. Sometimes before, but usually at this time the “night cries” are noticed. With the onset of the pain the patient endeavors to avoid anything that will give rise to it, so he is liable to carry himself rather rigid and

stiff and at the site of the disease there will be muscular contraction. Thus there is a spine in which there will be both voluntary and involuntary lessening of its normal mobility, which are responsible for the rather awkward walk of the patient. These subjective symptoms may be all that the patient will tell you of. However, in somewhat advanced cases the examiner's attention may be directed to a "hump" on the back. This may be anywhere from the size of a tiny knuckle-shaped lump to a large, rather oval-shaped protuberance. The patient who was formerly very active now tires very easily and tries to avoid moving about, showing a distinct inclination to be quiet and away from people to avoid being pushed or jarred or having to move about. In the objective examination, which should be conducted with the patient entirely stripped, the awkward, stiffish walk will be noticed at once. He will hold the trunk in a position of lesser or greater lordosis. In examining the spinal column to notice any change in the normal contour, muscular spasm will be noticed at and near the diseased area and at this point will also be observed, even in the very early cases, the beginning of the sharp, angular deformity, the so-called "knuckle" of Pott's disease. The peculiar, sharp angle of this "knuckle" is a positive sign of this disease of the spine. On placing the patient, stomach downward, on the table one will note muscular spasm and some rigidity at and near a tuberculous process when the spine is tested for any change in its normal mobility. Having the patient jump slightly in the air and come down on his heels or while he is still lying on the table both his heels should be jarred by the examiner, which causes pain in the spine and elsewhere. This is the referred pain already spoken of. What has already been mentioned are the most important general symptoms. In addition to these there are special symptoms depending upon the particular part of the spinal column involved. In the disease of the higher cervical region there are neuralgic pains through the posterior and lateral parts of the head. A stiffness of the neck causes the head to be held in a position of torticollis. On attempting to rotate the head or move it up and down the examiner meets with resistance. In a few cases thickness over the site of the tuberculous process can be felt. In the lower cervical disease the head is apt to be held in a backward and lateral position and the pain felt in the regions of the sternum, neck and arms. In the dorsal



disease the pain will be referred to the thorax or upper abdomen. There will be a round back with beginning "knuckle" deformity, pigeon-chest, and labored respiration, known as "grunting" breathing. These are especially important. In the lumbar spine the very marked lordosis, giving the appearance as if a very special effort was being made to stand very erect, will be perhaps the very first thing noticed. "Knuckle" will also be present and likewise contraction of the psoas muscle. The pain here will be referred to those parts supplied by the lumbar nerves. Special care is taken to avoid jarring when walking, standing or sitting. These patients do not bend over to pick things up but kneel for them in a very characteristic way, and in returning to a standing position they either pull themselves up in a very stiffish manner or push themselves up by placing their hands on their lower limbs. While in Pott's disease there may be some constitutional reaction it is very slight, the most constant feature being a slight rise in temperature. To recapitulate the diagnosis of Pott's disease will be based on the following points: 1. Spinal tenderness of jarring or jumping; 2. Referred pain; 3. Muscular spasm; 4. Spinal rigidity; 5. Spinal weakness; 6. Angular or so-called "knuckle" deformity; 7. Night cries or terrors; 8. Awkward, stiffish gait; 9. Avoidance of any spinal movement; 10. Characteristic posture, depending on the location of the disease; 11. Special symptoms of location of disease in the spinal column; 12. Positive tuberculin reaction. It should also be borne in mind that the onset of this disease is that of the slow and insidious condition, and that the disease is slowly progressive and chronic in type but has acute exacerbations. Unaccountable pains in various parts of the body may be due to pressure caused by a tuberculous process in the column. There are about twenty conditions from which tuberculosis of the spine must be differentiated. Here are briefly these conditions and how they differ from tuberculosis of the spine. 1. Rotary lateral curvature.—This is a purely mechanical condition unaccompanied by spinal tenderness or stiffness. The spinal deformity can usually be obliterated by suspension. The deformity is not angular and is usually a lateral one in which the ribs are involved. The gait is unchanged. There are no night cries. Jarring and missteps cause no spinal pain. There is no desire to avoid exercise, etc. 2. Rachitis.—The spinal deformity in this con-

dition is not constant, as it is obliterated on suspension. The mobility of the spine is unchanged. There are the other symptoms of rachitis, such as head sweating, bad feeling, square flat head, bony deformity of the caput, the rachitic bracelet, beading of the ribs, Harrison's grove, etc. 3. Typhoid spine.—Previous history of typhoid fever, absence of "knuckle" deformity, night cries, etc. Also larger area involved than is usual in typhoid. 4. Anterior poliomyelitis.—There is the sudden onset, and an actual paralysis instead of merely muscular spasm. There is change of electrical reaction, and other parts of the body are involved, etc. 5. Diphtheritic paralysis.—Previous history of diphtheria. Lack of muscular tone instead of spasm and rigidity (this condition is also sometimes found after other contagious diseases). 6. Torticollis of various kinds, in which, however, the onset is sudden and usually accompanied by or follows exposure to draughts, tonsillitis, earaches or other troubles of the upper respiratory tract. This may also be an accompaniment of glandular infections. 7. Acute rheumatism in which the acute onset—general joint involvements with redness, swelling, the temperature, pulse and acid sweating should be the guides. 8. Retropharyngeal abscess.—In the presence of this condition one must be careful not to mistake it for a manifestation of cervical disease which has been going on for some time. In simple retropharyngeal abscess, however, there are previous symptoms of a catarrhal affection with a sudden onset of obstructive breathing, etc. 9. Pseudo-hypertrophic muscular dystrophy.—The history of the case; the gait, and the muscular condition, particularly of those of the calves of the legs in the early stage, make the differential diagnosis. 10. Gonorrheal infection.—History of the case, search for the gonococcus and other joint involvement will clear up the case. 11. Spastic paralysis.—Lack of pain, general backward development, spasticity of parts affected, characteristic walk, etc. 12. Hip disease may sometimes be mistaken for a tuberculous spine affected in the lower segments. The attempt of putting the hip through its normal movements will very soon show the error. 13. Injury.—A history of trauma or strain unaccompanied by the characteristic deformity, pain, night cries, etc. 14. Lumbago.—This is entirely a muscular condition, therefore spinal tenderness and bony deformity are absent. 15. Sciatica.—In this condition careful differentiation should be

attempted to see whether the sciatic pains are not due to tuberculous disease of the spine. This can readily be done by testing the mobility of the spine, by testing for spinal tenderness in the usual way and by taking into consideration the history of the case and the mode of onset. 16. Double congenital dislocation of the hips.—The walk in this condition sometimes simulates very closely spinal disease of the lumbar segment of the column. An X-ray picture, and the examination as to spinal mobility and for the location of the heads of the femurs, would at once show the error. 17. Malignant disease.—This is a very rare condition in children and even rare in adults. Symptoms would be constant pain day and night, constitutional reaction, and the possibility of palpating the tumor mass. 18. Spondylitis deformans.—There is usually an acute onset with beginning stiffness throughout the spinal column; the stiffness is constantly progressive. There generally exists some constitutional reaction, pain, etc. 19. Sacro-iliac disease.—By fixing the pelvis there will be found complete mobility of the spine with an absence of spinal muscular spasm.

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## TUBERCULOSIS OF THE MUCOSA OF THE HARD PALATE

(REPORT OF A CASE)

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While the involvement of the tonsils, the soft palate, the laryngeal and pharyngeal tissues as a process, secondary to tuberculosis of the lungs, is not at all infrequent, the tuberculous invasion of the buccal mucous membrane, especially of that covering the hard palate seems to be of rarer occurrence.

The cases on record (there are only a few) are mostly such that have extended either from the labial mucous membrane to the gums and from there to the hard palate, sometimes resulting in perforation of the latter (Rethi, Crocker, Matzenauer), or have taken their

origin from a wound caused by the extraction of a tooth. Taking this as a nidus of infection, the processes have spread from there to the neighboring hard palate by continuity of tissue (Doutrelepont, Julien, Levy, Bonney, Cornet, Neumann). It may therefore be of interest to report a case which, while there cannot be any doubt of its secondary nature, is rare as to its location and its character as an independent lesion of the mucosa of the hard palate.

Mr. J.; 42 years old; a framemaker by trade; married; has healthy children, and has a good family history.

The patient is of small stature, pale, thin, flat-chested and of a stooping habitus, which gives his back a vaulted appearance. He has no lesions on the face, on the vermilion border of the lips nor on the gums. There is only one posterior molar left on either side in the upper jaw. He wears a plate which cannot, however, be considered an irritative factor, as the anterior margin of the lesion is about  $\frac{1}{4}$  of an inch behind its posterior border.

The patient had a cough for years. His sputum contains tubercle bacilli, and an examination of his chest reveals all the physical signs of pulmonary tuberculosis.

About two years ago he noticed a small red spot on the right side of the palate about  $\frac{1}{4}$  inch behind the posterior border of the plate. It increased somewhat in size, was extraordinarily painful and refused to heal after becoming ulcerated. He consulted a physician who, after treating it for a while, told him that he could not do any more for him. Another colleague who was seen next cauterized it with nitric acid. It disappeared after being treated for some time.

About four months ago it reappeared, spreading rapidly; it was then when he consulted me at the clinic.

During all this time he felt good and worked every day. He showed the following condition when I examined him: On either side of the median line there were aggregations of small papules of the size of pin heads which were somewhat acuminate, only little inflamed, did not bleed on touch, and were separated by a deep median furrow. They were more marked on the right than on the left side. The lesions were sharply defined anteriorly and merged into the tissues posteriorly with but very slight inflammatory reaction.

Behind the anterior border there was an ulceration on either side of the furrow; the one on the left was the larger in size. These ulcerations were triangular in shape, had irregular margins, were superficial and spreading peripherally. Their bases were red, painful and slightly bleeding on touch and were very little indurated with margins that were only moderately inflamed and covered with a dirty grayish material.

They were first touched with 25% lactic acid, but when this failed to make an impression 95% carbolic acid was resorted to. During this treatment the patient also was treated by Dr. Pisani for his pulmonary tuberculosis. While the right ulceration responded to the application of carbolic acid and disappeared soon, the left one showed a decided tendency to spread and proved to be very recalcitrant.

The ulcers finally disappeared leaving very little scar tissue and a somewhat tunicated condition of the mucous membrane, the papular, i.e., tubercular condition, spread laterally, at last almost touching the alveolar processes.

The microscope showed the following: the epithelium presented a moderate amount of edema. In the connective tissue directly beneath the epithelium were distinct isolated collections of small, round cells, in the center of which giant cells were discerned.

## General Retrospect

### THE DIAGNOSIS AND PROGNOSIS OF EPIDEMIC INFANTILE PARALYSIS

(BASED UPON RECENT LITERATURE)

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Numerous epidemics of this serious disease have been recently reported by careful observers in different parts of this country and abroad so that statistics of a great many cases are now available. With the great mass of material at hand, it is somewhat confusing and more or less laborious for the busy practitioner to obtain such knowledge of the disease as he may wish in a condensed form. I have, therefore, endeavored to compile what data seem to me of most value from various sources. Without going into a long discussion, suffice it to say that, through the work of Flexner, Lewis, and others, it has been proved beyond doubt that this disease is certainly infectious, and probably contagious, the nature of the infection not being known. Numerous instances are on record showing the infectiousness and probable contagiousness of this disease. Thus Anderson states that in 41 families with 150 children 86, or 57 per cent., contracted the infection. While Schilder reports numerous instances of undoubted infection and possible contagion, 31 per cent. of these cases occurred as single cases in families having more than one child, 44 per cent. in families where there were 2 or more children, all of whom acquired the disease, 4 per cent. in families in which there was but the single child, and 64 per cent. in families where more than one child was affected. In 50 cases studied by Müller numerous instances of the disease occurred through a third person.

*Diagnosis.*—The diagnosis of infantile paralysis is not always an easy matter, unless there happens to be an epidemic, and even then there are numerous other diseases with which it may be confounded. Careful observation and history of each case will usually enable us to determine the nature of the disease. Anderson states that in the cases he was able to study, the premonitory symptoms

occurred 2 to 7 days before the acute symptoms began. Zappert from a study of 266 cases in Vienna says that a prodromal stage of 1 to 3 days was common. Kerr's cases had an interval of from less than a day to 10 days between the occurrence of the first symptoms and the occurrence of the paralysis, the majority of his cases occurring from 2 to 7 days. In 46 of my own cases, this period, in the majority of patients, was from 1 to 4 days. During this period there may be present slight muscular rigidity about the spine, and a modified Kernig's sign (i.e. present in one leg only, or more severe in one leg than the other); frequently there is a slight rise of temperature which is apt to fall to normal in a few hours after a laxative has been given. At this stage the patellar reflexes are, as a rule, exaggerated and unequal, but where paralysis is certain to come the reflex is decreased. There may be weakness of any one of the extremities, more frequently the leg.

The acute symptoms usually begin with a rise of temperature, 99 to 101 deg. F. (in a few cases ushered in with a chill). Pain and tenderness along the spine and a spastic condition of that region are present, and at this time Kernig's sign is more prominent. On the second day of the disease the temperature is higher, ranging from 100 to 103 or 105 deg. F. in severe cases, the average being 101 or 102 deg. F., unless the case is of a mild or abortive type. Opisthotonos may be present and the head is not infrequently markedly retracted. Older children may complain of pain and tenderness along the spine, of headache, and pain in the extremities which will be paralyzed later on. The pulse is rapid, 120 to 160 per minute, and the spasticity may be quite general. There may be tremor, or a clonic condition. These patients are mostly drowsy and apathetic and take little notice, except when disturbed. Inclination to perspire is a common early symptom, and in some cases the sweating is profuse. Vomiting was common in Anderson's cases, and in some it was obstinate and not of gastrointestinal origin. Constipation was present in every case during the febrile stage. Vomiting occurred in 18 instances of Kerr's 53 cases, in 10 there was constipation, and in 26 diarrhea. In Müller's cases tonsillitis and bronchitis were very common initial symptoms. During the febrile stage there may be only febrile symptoms or added to these there may be digestive or respiratory affections. In 200 cases reported by Davis in the epidemic of St. Paul, more than one half had stomach or intestinal troubles preceding the attack, and Krause states that in 90 per cent. of 40 cases these symptoms were present. Rigidity of the neck was present in all of the severe and many of the mild cases in Davis' series, while Kerr noted this symptom in only two instances. There may be atony of bowels and bladder, and the urine may not be voided for 24 hours. On the third day of

the disease the fever becomes lower and the paralysis is usually evident, but it may not appear until later. On the fourth or fifth day the temperature usually becomes normal, and the headache and back-ache abate, but in some cases there now appear severe intermittent pains, worse at night, which may last for several weeks and occur along the course of the great nerves, sometimes causing tingling. These pains may occur every 15 or 20 minutes, or once in several hours, and they last from a fraction of a minute to several minutes. Anderson distinguishes the rash that may occur as usually coarser than that of scarlet fever and less spotted than measles. Rose-colored spots from one-half to two inches in diameter were observed which last a few days and then fade to a brownish color. Mental irritability is quite a common symptom, lasting sometimes for weeks.

In 46 cases observed by the writer the paralysis occurred as follows: right leg 17 instances, left leg 15, right arm 1, left arm 2, both legs 3, facial paralysis 1, paralysis of deltoid muscles 1, both legs and one arm 1, left foot and leg 1, left hand and arm 1, multiple paralysis of spinal muscles 1, left leg and left arm 1, right arm deltoid and pectoral muscles 1. There were 10 under one year of age, 21 from 1 to 2 years of age, 9 from 2 to 3 years, 2 from 3 to 4 years, 3 from 4 to 5 years, and one 9 years.

Wickman has described eight different types of the disease. 1. The spinal or poliomyelitic type, which is the most common and which will be described with its many and varied symptoms fully hereafter. 2. The ataxic type, which is very rare with marked ataxia, due principally to involvement of the cerebellum. 3. The neuritic type, so-called from its resemblance to a neuritis. (Neuritis, with the exception of the diphtheritic form, is such a rare disease in childhood that when it occurs during an epidemic not following diphtheria, infantile paralysis may be suspected.) 4. The meningitic type, with meningitic symptoms predominating. 5. The encephalitic type, with complete loss of consciousness, single twitchings in the face or extremities, or general convulsions. Clonic contractions of the face and extremities with turning of the eyes, or eclamptic attacks sometimes occur even at the beginning of the disease. This type has been rare in our recent epidemic. 6. The bulbar or pontine type; here there is an involvement principally of the bulbar or pontine nuclei. These are the cases in which we get palsies of the pharynx or larynx, or isolated eye palsies, and facial palsies, many cases being fatal from medullary involvement. 7. The acute ascending or descending types, which correspond to Landry's paralysis. These cases are usually fatal. 8. The abortive types; where there are the early symptoms without a development of paralysis. Müller believes these cases to be more common in an



epidemic than all the other forms, and Wickman considers that nearly 20 per cent. of the cases are of this type. It is evident that in this type the system has been able to overcome the infection before it has permanently damaged the affected nervous tissues.

Thus the disease may have many grades of severity, and in the abortive type there may be only fever, hyperesthesia, tonsillitis, or gastrointestinal trouble with no paralysis and symptoms of apathy and somnolence from which the patient recovers in 6 or 8 days.

If we remember that this disease usually begins with uneasiness, somnolence, pain in the head, neck, and along the spine and nerve trunks, accompanied by weakness and slight spasticity, fever and vomiting, we shall be able to diagnose many cases before the paralysis develops, and in times of epidemics, it is only fair to consider cases with the above symptoms when no paralysis appears as abortive cases.

In Foerster's cases the meningeal symptoms were well marked at the beginning of the disease, during the course, and in a few cases after the paralysis had disappeared, and these meningeal cases may resemble cerebrospinal meningitis very closely, so that a differential diagnosis may be difficult, at first. Among the symptoms Foerster noted was pain in the back, especially on passive motion, and all painful muscles were tender. The last symptom was present in all of Kerr's cases.

Kernig's sign was present in a few cases. Lumbar puncture showed clear cerebrospinal fluid under considerable pressure, containing an increased number of lymphocytes. The knee-jerk was not always absent, ankle clonus was often present at the beginning of the attack and sometimes after the paralysis had disappeared. The Babinski sign was observed at one time or another in all cases. The height of the paralysis was not reached before the tenth or twelfth day in a number of cases. Relapses with fresh paralysis and fever were not very infrequent.

Characteristics of the paralysis.—Often the foot is spared when all the other parts of the lower extremities are affected, and if a part of the foot is involved, the toes always remain unparalyzed. This also applies to the upper extremities when involved. A condition which is rarely seen is paralysis of the muscles of the abdomen, causing bulging during coughing or crying. This hernial protrusion is dome-shaped, and a patient so affected is unable to rise unassisted from the reclining posture. Difficulty in deglutition is not an uncommon symptom, it occurred 15 times in Kerr's cases. In Müller's cases important symptoms were weakness of the abdominal muscles, meteorism, and the loss of abdominal reflex. Often cases with violent onset occur with no paralysis, or mild initial symptoms were followed by severe paralysis. Pontine and bulbar paralysis were

frequent. The fulminating and abortive types of the disease may appear in the same family. A case is cited where both, a mother and her child, were taken with angina and the mother recovered while the child died of Landry's paralysis. In Anderson's cases the anterior leg and thigh were often paralyzed without any apparent involvement of the posterior muscles, but the reverse was not true.

*Prognosis.*—Our prognosis in this, one of the gravest of infectious diseases, should always be guarded, since it is almost impossible to say at the commencement, what the outcome of a given case may be. Cases may begin with severe symptoms and a stormy onset, but may eventually recover with little or no paralysis. On the other hand, cases with mild initial symptoms may be left with severe and extensive paralyses, or succumb to the disease. The following case which occurred in Westphalia shows what care should be used in making a prognosis: a girl, 8 years of age, after a mild prodromal stage developed a flaccid paralysis of both legs; her general condition was excellent, and all the organs, especially the heart, appeared healthy, when, without any warning, death suddenly occurred on the second day, being probably due to the action of toxins on the heart. According to Straus and Huntoon the medulla, pons, and basal ganglia are always involved in fatal cases, although such involvement does not always mean a fatal prognosis. It is well to remember that, on account of the congestion of the surrounding nerve tissue, there will be more paralysis at first than will remain.

The mortality has varied in the different epidemics ranging all the way from 4 to 20 per cent. J. M. Armstrong in his report of the epidemic in and about St. Paul, Minn., states that there were 48 deaths from among 238 cases of the disease; a mortality of 20 per cent.

In an editorial that appeared in *Pediatrics* in 1910, it is stated that the mortality ranges from 8 to 15 per cent., and that of the cases that ultimately survive, 80 per cent. are permanently paralyzed, and remain crippled for life. This estimate of permanent cripples, it seems to me, is entirely too high, it is an exaggeration that is misleading. In the New York City epidemic, as near as could be ascertained, there were only 25 deaths. No doubt there were numerous other cases that died where a wrong diagnosis had been made, although this was considered to be a rather mild epidemic and mostly children were affected.

Of 86 cases reported by Anderson there were 4 deaths, and of the 82 surviving cases 48, or 60 per cent., were at first markedly paralyzed, and of these 26 afterwards functionally recovered, while 22 still remained more or less paralyzed, many of which will need orthopedic treatment to prevent deformity. Thus 73 per cent. recovered eventually and 27 per cent. were left crippled for life; a

large percentage of the latter, however, will be very much improved by proper treatment. Winnett says that in an epidemic of 279 cases, there were 10 deaths, or 3.5 per cent. In Anderson's 86 cases there were 4 deaths, or a mortality of 4.6 per cent. Kerr has notes of 64 cases of the epidemic that occurred recently in Brooklyn, 3 of which died—one of paralysis of the respiratory muscles, a girl 19 months old; one a girl 12 years and 1 month of age, who had general paralysis, and one, a boy, 3 years and 2 months, who had complete intercostal paralysis; a mortality of 4.68 per cent. In the epidemic reported by Zappert in 1908-1909 data of 266 cases showed that there were 14 cases of the Landry type of paralysis, all of which died; a mortality of 5.25 per cent. Of 93 cases in the Bochum district of Rhenish Westphalia 17 cases, or a mortality of 15.2 per cent. occurred.

The ultimate outcome of the paralyzed cases and the degree of atrophy will depend upon the amount of nerve tissue that is permanently damaged. There may be very extensive paralysis with complete recovery, so that such a paralysis may not always seem hopeless. Of Anderson's 82 surviving cases, 32 recovered from the acute symptoms in less than a week, 30 of which showed no mark of paralysis, except that a leg might give way when walking. Twelve cases recovered from acute symptoms in 3 weeks, all were paralyzed, 6 recovered. One leg recovered in 7 months; right arm in 6 weeks; diffuse weakness disappeared after 1 week; both legs and back recovered in 2 months; both legs and back in 5 months; both legs and trunk in 5 months. Six cases after 8 months had not recovered, of which the right leg was paralyzed in 2 cases, left leg in 1 case, left leg and trunk in 1 case, both legs in 1 case, and 1 arm and 1 leg in 1 case. Seven cases recovered from acute symptoms in 4 weeks, all were paralyzed; 3 cases recovered in 3 months, both legs being paralyzed in 2 cases, one leg in 1 case. Four cases after 8 months had not recovered. Two cases were paralyzed as follows: one left leg and right arm with almost complete recovery in 5 months, one with mental symptoms and recovery in 9 months. Seventeen cases recovered from acute symptoms in 1 week, 8 had no well defined paralysis, and 9 had paralysis, of these 6 recovered,—one of left leg in 2 weeks; 4 of both legs, 3 recovered in 3 weeks and 1 in 8 months; 1 of the intercostal muscles in 1 week; 3 did not fully recover. Seven recovered from acute symptoms in 2 weeks, one without paralysis, and 6 with paralysis; 2 of these recovered, one mentally in 1 week, 1 eyelid paralysis in 1 month; 2 in 1 arm recovered in 8 months.

*Differential Diagnosis.*—Cerebrospinal meningitis and the cerebral type of infantile paralysis may be difficult to differentiate during the first few days, since they both usually have an acute and

stormy onset, characterized by headache, backache, delirium, convulsions, projectile vomiting, spasticity, opisthotonos, and constipation. In meningitis we find the Kernig's sign equally apparent in the two legs, while in poliomyelitis it is unequal, one leg being more painful and spastic than the other. The temperature in meningitis runs an irregular course and lasts a long time, while in poliomyelitis the temperature is regular, lasting only from 1 to 4 or 5 days at the most, and is followed by paralysis, or the patient may recover though with spastic spine or extremity, or the two combined. The infantile paralysis patient may be kept in bed for several weeks on account of the pain along the course of certain nerves, but with no fever, good appetite, and perfect consciousness, while in meningitis we have the reverse. Lumbar puncture will at once clear up the diagnosis. Cases simulating measles, or scarlet fever, will be recognized by the occurrence of paralysis. Autointoxication may be mistaken for poliomyelitis, where there is atony of the bowel. Clearing and disinfecting the gastrointestinal tract will give relief to cases of autointoxication; these procedures remain without influence in poliomyelitis.

Rheumatism may be distinguished by the presence of swelling or tenderness about the joints. In poliomyelitis the pain is felt along the course of the nerves, and is present to a greater degree after the fever stage. Anti-rheumatic treatment has no effect in relieving the pain.

Poliomyelitis should not be confounded with influenza, although the symptoms during the first two days may be quite similar. The modified Kernig's sign, spastic spine, spasmodic movements and tremors, exaggerated or absent reflexes, absence of catarrh of the respiratory tract, and later on paralysis, will prevent such an error.

In typhoid fever we have a wholly different picture. There is a gradual onset with long-continued fever, poor appetite, positive Widal test, no paralysis, spastic spine, or Kernig's sign.

Infantile scurvy has been mistaken for infantile paralysis, when seen late in the disease.

## **Progress of Diagnosis and Prognosis**

### **GENERAL METHODS OF EXAMINATION—SYSTEMIC AFFECTIONS—DISORDERS OF GENERAL METABOLISM**

**Determination of the Catalytic Activity of the Blood as a Clinical Diagnostic Method**—M. C. WINTERNITZ, G. R. HENRY and F. MCPHEDRAN, Arch. Int. Medicine, Vol. VII, No. 5.

An exhaustive article which has to be studied in the original. The method employed by authors is as follows: Blood (0.025 c.c.) is removed from the lobe of the ear in a pipette. This is diluted in 10 c.c. of water. Five c.c. of this dilution suffices for a test. It is placed in a 100 c.c. bottle in which there is also a vial with 5 c.c. of neutral hydrogen peroxid. The large bottle is connected with a gas burette and the amount of oxygen liberated measured over a given period of time (15 seconds). The procedure requires only a few minutes, the error is slight and no precautions beyond ordinary room temperature and clean apparatus are necessary. The catalytic activity of the blood of a series of normal individuals varies within physiological limits in 80 per cent. of the cases examined. In the other 20 per cent. the amount of oxygen liberated varied within wide limits. These variations are entirely independent of the number of red blood cells and the hemoglobin. The nature of this variation is obscure. It is, however, of the utmost importance to bear this variation in mind when interpreting the activity of the blood in pathological conditions. On the other hand, the catalytic activity of the blood of a single normal individual is constant from day to day over long periods of time and in this way a base-line can be obtained from which the significance of any change in the activity can be readily interpreted.

WESTERN.

**Determination of Red Blood Cells by Means of the Centrifuge**—R. SCHMINCKE, Münchener med. Wochenschr., May 23, 1911.

The hematocrit method of Schmincke yields exact results as regards the amount of erythrocytes which are contained in a certain amount of blood. The method is of great practical value in controlling the blood composition after therapeutic endeavors and for the determination of the total amount of blood in the living subject.

MILL.

**Demonstration of Minute Amounts of Albumin in the Urine**—GLAESGEN, Münchener med. Wochenschr., May 23, 1911.

The urine is acidulated with a few drops of acetic acid (20 per

cent.) before it is boiled. In case the urine is very alkaline it is best to add a few drops of acetic acid also after boiling (to differentiate between precipitating phosphates). The test is sensitive in a dilution of 1 to 180,000.  
MILL.

**Diagnostic Significance of the Urinary Methylene-Blue Reaction with Special Reference to Malignancy**—J. FUHS and W. LINTZ, *Jour. A.M.A.*, June 24, 1911.

Searching for abnormal products of elimination in the urine in cases of malignant disease, authors observed that methylene-blue was decolorized by the urine of patients affected with malignant disease. Repeated examinations and more extensive investigations demonstrated that urines in cases of rheumatism, nephritis, meningitis, etc., were also sometimes decolorized, but generally to a minor and variable degree. In most instances the latter conditions could be readily ruled out; it thus appears as if this reaction may have considerable value in the diagnosis of malignant disease. Many of author's cases have been corroborated by operations and post-mortem and pathologic diagnosis. The technic of the test is as follows: Methylene-blue, usually 3 to 5 drops of Löffler's methylene-blue, is added to a test-tubeful of fresh urine; sufficient of the dye is employed to give it a decided blue color. The urine is shaken and then allowed to stand at room temperature for from 12 to 24 hours. A control fresh specimen of normal urine similarly treated is made. At the end of the 12 or 24 hours the blue color of the urine has disappeared; the upper layer, however, which is in contact with the air, still remains more or less blue. The control specimen, on the other hand, remains unchanged, retaining its uniform blue color.

WESTERN.

**Melanuria without a Melanotic Tumor**—H. ZOEPFRTZ, *Münchener med. Wochenschr.*, June 6, 1911.

The patient, a man 69 years old, suffered for 5 weeks with gradually increasing ileus-like disturbances; he died from perforation peritonitis. During the last days of life the patient excreted yellowish-brown urine, which, on standing for an hour, assumed deep-black coloration. The urine yielded the chemical reactions that are characteristic for melanin. Necropsy revealed a small stenotic carcinoma of the sigmoid flexure with metastases, but no abnormal pigmentation. A melanotic tumor could not be found.

MILL.

**Excretion of Urinary Iron in Malaria**—G. GIEMSA, *Archiv f. Schiffs- u. Tropen-Hygiene*, 1911, No. 10.

In the urine of mammalia iron is generally found in organic

combination either loosely combined or in a fixed form. Loosely combined iron occurs in human urine under pathologic conditions only, especially in the course of such diseases which are accompanied by a marked destruction of the red blood cells. Author could demonstrate loosely combined iron in all urines of malaria in which parasites and fever were present. The amount of the urinary iron corresponded to the number of parasites; disappearance of the urinary iron concurred with disappearance of the parasites. Examination for loosely combined iron is of no value in the diagnosis of latent malaria.

FRY.

**The Urine after Administration of Salicylic Acid**—K. NEUBERG, Berliner klin. Wochenschr., May 1, 1911.

Ingested salicylic acid may be excreted in five possible forms: it may appear as unchanged salicylic acid, as salicylic-ether-sulphuric acid, as salicyluric acid, as salicyl-glycuronic acid, and as oxysalicylic acid.

MILL.

**A Peptid-Splitting Ferment in the Saliva**—L. M. WARFIELD, Johns Hopkins Hospital Bull., May, 1911.

There is a substance in the saliva, probably an enzyme, which has the power to split glycytryptophan. This property of the saliva is lost when the saliva is acid or when it is heated to 100 deg. C. Stomach contents containing no free HCl may split glycytryptophan. Stomach contents which have a high combined acidity or which contain a relatively large amount of lactic acid fail to split the dipeptid. In view of these facts the glycytryptophan test is of no value in the diagnosis of cancer of the stomach.

WESTERN.

**Tryptic and Diastatic Ferment in the Stools of Normal Digestion, Fever and Diarrhea**—K. HIRAYAMA, Zeitschr. f. experimentelle Pathologie u. Therapie, Vol. VIII, No. 3.

The trypsin contents are not diminished in the fecal extracts of febrile patients. The amount of ferment may be greatly reduced in diarrheal evacuations. The amount of diastatic ferment fluctuates even under normal conditions; it cannot be utilized, therefore, for testing pancreatic activity. The diastatic ferment is distinctly diminished in diarrheal stools; in febrile conditions its amount fluctuates.

WESTERN.

**The Wassermann Reaction with Serum of Anesthetized Patients**—H. BOAS and T. PETERSEN, Hospitalstidende, 1911, No. 16.

The Wassermann reaction was performed with the sera of 60

anesthetized patients who gave no history and presented no symptoms of syphilis. The reaction was positive in three instances of chloroform narcosis. A week after the narcosis the reaction did not ensue any longer.

TESSEN.

**Water-Drinking**—W. M. HATTREM and P. B. HAWK, Arch. Int. Medicine, Vol. VII, No. 5.

Authors offer the following conclusions: The drinking of copious (1000 c.c.) or moderate (500 c.c.) volumes of water with meals decreased intestinal putrefaction as measured by the urinary indican output. Copious water-drinking caused a more pronounced lessening of the putrefactive processes than did the moderate water-drinking. In copious water-drinking the total ethereal sulphate output was increased coincidentally with the decrease in the indican output. This observation furnishes strong evidence in favor of the view that indican has an origin different from that of the other ethereal sulphates, and that they cannot correctly be considered as indexes of the same metabolic process. When Ellinger's method is employed, the determination of indican should be made on fresh urine before any preservative has been introduced. Especially is this true when thymol is used as the preservative. The decreased intestinal putrefaction brought about through the ingestion of moderate or copious quantities of water at meal time is probably due to a diminution of the activity of indol-forming bacteria following the accelerated absorption of the products of protein digestion, and the passage of excessive amounts of strongly acid chyme into the intestine.

WESTERN.

**Hemolytic Icterus and Hemoglobinuria**—H. v. D. BERGH, Tijdschr. voor Geneesk. 1911, No. 2.

Case report. Patient had icterus a number of times, but excreted normal-colored stools. The later attacks were accompanied by bloody urine. Liver and spleen were not enlarged. Well pronounced anemia supervened at the same time. Disease of any organs could not be determined. Author thought to be confronted with abnormally fragile blood cells. The blood cells showed normal resistance to solutions of sodium chloride. A search for specific hemolysins proved negative. Saturation of the blood with CO<sub>2</sub> showed that there was hemolysis and that the attacks of icterus and hemoglobinuria were the result of a destruction of the blood cells by hemolysins of its own serum.

WEBB.

**Tobacco Dyspnea**—J. D. RECKITT, Lancet, June 3, 1911.

An alarming condition of dyspnea may attend the unconscious abuse of tobacco. Author records a case of a man, 54 years old,



who complained of dyspnea on exertion. No cyanosis was present, and there were no signs or symptoms indicative of any pathological condition except the excessive use of tobacco. The dyspnea entirely disappeared when the tobacco was withdrawn. SACHS.

**Diagnostic Value of Palpable Cubital Glands in Children**—P. GROSSER and A. DESSAUER, *Münchener med. Wochenschr.*, May 23, 1911.

The appearance of palpable cubital glands has no special significance either in nurslings or in later childhood. Thirty-four per cent. of syphilitic nurslings exhibited no enlargement of the cubital glands. On the other hand, enlargement of the cubital glands could be demonstrated in 42 per cent. of rachitic children. The symptom has no diagnostic value whatsoever in older children. MILL.

**Uremia**—F. OBERMAYER and H. POPPER, *Zeitschr. f. klin. Medizin*, Vol. LXXII, Nos. 3 and 4.

Indican, which neither occurs in normal serum nor in the sera of the most discrepant diseases, is present in the great majority of uremic sera in greater or lesser amounts. Its occurrence is characteristic for uremia; its demonstration possesses diagnostic and prognostic value, and points to a renal affection in the uremic stage. By means of the sense of smell, Millon's reaction and precipitation with bromine water the presence in the uremic serum of other aromatic substances may be recognized. In most instances of uremia there exists a higher molecular concentration of the serum and N. retention. WESTERN.

**The Termination in Diabetes Mellitus and Glycosuria**—R. T. WILLIAMSON, *Practitioner* (London), June, 1911.

The termination in 100 cases of diabetes mellitus which have come under author's observation, was as follows: diabetic coma and acidosis (including cases in which all the toxic symptoms of diabetic coma were present except coma) 59 cases, coma associated with heart failure, but without acidosis—"diabetic collapse"—1 case, phthisis 17 cases, sudden cardiac failure 7 cases, acute pneumonia 3 cases, chronic Bright's disease 3 cases, gangrene 2 cases, pyemic multiple abscess of the liver 1 case, erysipelas 1 case, cirrhosis of the liver 1 case, intercurrent diseases—(cancer 3, cerebral hemorrhage 1, cystitis and pyemia 1)—5 cases. SACHS.

## INFECTIOUS DISEASES

**Diagnostic and Prognostic Value of Russo's Methylene-Blue Reaction in Tuberculosis**—J. v. SZABÓKY, *Zeitschr. f. Tuberkulose*, Vol. XVII, No. 3.

Russo's method is as follows: Four or 5 drops of a solution of methylene-blue (1:1000) are added to 4 or 5 c.c. urine; the mix-

ture is then shaken. Emerald-green coloration indicates positive reaction; when the reaction is negative the color remains blue. Author employed this method and advances the following conclusions: the diagnostic value of Russo's methylene-blue reaction for pulmonary tuberculosis is rather insignificant. Constantly positive Russo's reaction in pulmonary tuberculosis means a bad prognosis. Definite results cannot be obtained from constantly negative nor from sometimes positive, sometimes negative methylene-blue reactions. The methylene-blue reaction is more than a mere color reaction. This reaction possesses nearly the same value as the diazo reaction (see ARCHIVES OF DIAGNOSIS, Vol. IV, p. 186). On account of its simplicity Russo's methylene-blue reaction deserves to be employed in routine practice. FRY.

**Tuberculin in the Diagnosis of Tuberculosis**—E. C. HART, Quarterly Jour. of Medicine (London), April, 1911.

Author states that tuberculin should not be inoculated into the conjunctiva if it can possibly be avoided because the results in damage to the eye may be disastrous, unless dilute solutions be employed, while correct dilution for the individual case is often difficult to determine. It sometimes happens that subsequent therapeutic injection of tuberculin has to be abandoned because each injection gives rise to a violent conjunctival reaction. The sole merit of Calmette's test lies in the claim that a reaction only rarely occurs in cases of quiescent disease, a claim which appears to be generally upheld. In connection with the diagnostic use of tuberculin, whether by inoculation under or into the skin or into the conjunctiva, it should be borne in mind that in apparently healthy subjects a definite local hyper-susceptibility may result if more than one inoculation be used. When this does occur it may, of course, vitiate the interpretation of any results obtained. SACHS.

**Unequal Pupils, an Early Symptom of Pulmonary Tuberculosis**—L. WILFER, Wiener med. Wochenschr., March 13, 1911.

Inequality of the pupils is often noted in pulmonary tuberculosis. This inequality may even be observed when the patient is at rest and the illumination not too strong. In the absence of other causes, dilatation of the pupil points to an alteration of the bronchial gland of the same side; the latter occurrence frequently indicates the existence of tuberculosis. The diseased lung is not necessarily on the side of the dilated pupil. MILL.

**The Spinal Fluid in Tuberculous Meningitis**—HOHN, Berliner klin. Wochenschr., May 1, 1911.

If, after centrifuging, a clear spinal fluid exhibits a marked augmentation of its albumin in comparison with its sediment, and if in

the latter there exists an increase of lymphocytes alone or with a few polynuclear leucocytes characterized by degenerative changes, the diagnosis of a tuberculous inflammation of the soft membranes of the brain may be made, even when tubercle bacilli have not been demonstrated. Of course, the entire clinical picture has to be taken into due consideration. MILL.

**The Action of Salvarsan upon the Wassermann Reaction**—H. FOX, N. Y. State Jour. of Med., June, 1911.

The action of salvarsan upon the Wassermann reaction is in general analogous to that of mercury. The effect upon the Wassermann reaction is much less favorable than upon the clinical manifestations of syphilis. WESTERN.

**Complement-Fixation Method in the Diagnosis of Rabies**—W. NEDRIGAIL-OFF and W. SAWTSCHENKO, Zeitschr. f. Immunitätsforschung u. experimentelle Therapie, Vol. VIII, Nos. 3 and 4.

Prompted by the failure of the complement-fixation test to give positive results in rabies, authors have utilized as antigen the salivary glands which latter excrete the unknown cause of hydrophobia. With this antigen positive results were obtained; the modified method may be made use of in the diagnosis of rabies. FRY.

**Diagnostic Value of a Blood Examination in Pertussis**—J. A. KOLMER, Am. Jour. Dis. Children, Vol. I, No. 6.

The blood formula in pertussis may be considered as fairly well defined. Early in the catarrhal stage there occurs a leucocytosis with an absolute increase in the percentage of small lymphocytes. The leucocytosis and lymphocytosis increase with the severity of the disease, reach their highest point in the paroxysmal stage and then fall by lysis, reaching normal proportions in from 2 to 3 months. In the stages of improvement a mild eosinophilia is found. Out of 37 cases of cough which could not be diagnosed clinically from pertussis in the catarrhal stage, 16 proved later to be pertussis. Of these, 13, or 81.25 per cent., had been diagnosed correctly by means of the blood examination. Three, or 18.75 per cent., were given an incorrect diagnosis. Of the 21 cases proving not to be pertussis, 15, or 71.4 per cent., were given the correct, and 6, or 28.6 per cent., the incorrect diagnosis. The presence of secondary infection which may by itself produce a leucocytosis with a relative or actual decrease of the small lymphocytes, will lead to error. In such cases it is better to be guided by the total number of leucocytic elements in a c.c. of blood rather than by percentages. WESTERN.

**Some Points in the Diagnosis of Scarlet Fever**—A. K. GORDON, Practitioner (London), May, 1911.

Author is of the opinion that in the acute stage of the disease,

too much attention is directed to the eruption. In acute rheumatism and follicular tonsillitis, we very often see a rash that is quite indistinguishable from that of scarlet fever, both in appearance and distribution. Pathologically it is a toxic erythema of vasomotor origin and so it is not surprising that it should be closely simulated by similar conditions produced by other toxins. The point of most value is the co-existence of a "dirty throat"—that is, exudate on the fauces with a peeled and papillated tongue. This combination is present in nearly every case of scarlet fever. The so-called strawberry tongue is characteristic of nothing whatsoever, and may be repeatedly seen in enteric fever and pneumonia. In the second group of cases where the patient has been suffering previously from an illness which may or may not have been scarlatinal, in the absence of any of the above mentioned signs and desquamation, we have only two points which are of value. One of these is the presence of dark-brown isolated follicular raised spots on the outer aspects of the legs or arms. They are not present in more than 50 per cent. of the cases of scarlet fever. The second point is slight albuminuria combined with repeated negative cultures for diphtheria bacilli from the fauces. In the third group of cases where we see the patient for the first time when he is peeling, it must be remembered that peeling does not always denote a previous attack of scarlet fever. Peeling of a kind may occur after almost any type of eruption. SACHS.

**Pastia's Sign in Scarlet Fever**—G. H. TAUBLES, Cal. State Jour. of Med., June, 1911.

Pastia's sign facilitating an early and positive diagnosis of scarlet fever consists in an intense continuous, linear pigmentation of the skin folds across the anterior surface of the elbow, varying in color from rose red to dregs of wine and even appearing ecchymotic. These lines vary in number from one to four, and the eruption on the skin lying between them, when they are multiple, resembles that on the rest of the skin. The time of appearance of this sign is simultaneous with the appearance of the rash. It persists not only during the eruptive period but for a varying time afterwards, even until desquamation is complete. Its occurrence in the skin folds of the axilla has been observed but it is neither so constant nor as permanent in this region as in the arm. Pastia believes that this sign will be as useful in scarlet as Koplik's is in measles, and especially so in those cases where the accompanying symptoms are doubtful or where the rash has disappeared before the case has been seen by the physician. Marbe found this sign in one case of measles and 94 out of 100 cases of scarlet at Bucharest. In Hutimel's clinic in Paris, 29 out of 30 cases of scarlet presented this sign. From his personal experience author draws the following

conclusions: the sign approximately as described by Pastia has been identified in 100 per cent. of the cases; it is of use in the diagnosis of cases where the rash is atypical; it is of use in the diagnosis of cases seen after the rash has subsided and before desquamation is pronounced; those cases of other diseases (measles) in which the sign was present were so palpably not scarlet fever that its value is hardly to be regarded as impaired by this occurrence.

WESTERN.

**Scarlet Fever; Preliminary Note of its Specific Microorganism**—A. E. VIFOND, *Arch. of Pediatrics*, July, 1911.

Author intended this article as a preliminary report. He concludes that a specific bacillus has been obtained from 7 cases of scarlet fever. The bacillus will grow on all ordinary media, the growth occurring in three and a half hours. The bacilli are to be found in the lymph nodes, where they multiply and form toxins which enter the circulation. The bacilli have been inoculated into 5 monkeys and 2 rabbits. Typical scarlet fever has developed in all, including the rash, enlarged lymph nodes and desquamation, etc. No suppuration in any one instance took place at the point of inoculation. Streptococci would likely have had this effect. The same bacilli have been recovered from the lymph nodes in each instance, and further, the typical growth has developed on the different media.

WESTERN.

**Congenital Malaria**—SABELLA, *II Policlinico*, April, 1911.

Report of two cases of malaria in pregnant women. The one woman died from an attack of the pernicious form of the disease, the other aborted in the fourth month. The careful blood examination demonstrated that there did not occur a congenital transmission of the infection.

ZIMMER.

**Malta Fever**—PHOCAS, *Jour. méd. de Bruxelles*, 1911, No. 21.

Description of a number of fixed points of pain on the muscle attachments of tibia, femur, spine and sacrum. The painful spots are the expression of an infective osteitis and cause violent neuralgias.

ZIMMER.

**Typhoid Sepsis**—JORES, *Münchener med. Wochenschr.*, June 6, 1911.

Report of a case. A man, 45 years old, was suddenly stricken with a septic affection. He had chills, with an angina and a few days later acute rheumatic torticollis. The general condition was yet good at this period. Two days later there occurred violent pains in both wrists. The temperature was 39.1 deg. C. The following

evening the left external ear was intensely red, swollen and painful. The urine showed neither albumin nor sugar. From now on the general condition became aggravated. The temperature increased steadily. Patient became restless, but heart and lungs showed nothing abnormal. There was pronounced redness and swelling of the uvula and fauces. A scarlatiniform eruption was noted on the back, and especially in both hypochondrial regions. Patient died in coma. Necropsy evinced no organic changes, especially no pathologic conditions in the intestine. The blood contained typhoid bacilli in pure culture. Patient had severe typhoid fever when he was 16 years old; it may be assumed that he became a typhoid carrier, and that his typhoid sepsis may have been caused by transmigration of his own typhoid bacilli into his blood. MILL.

**Diagnosis of Typhoid Splenic Abscess**—K. PROPPING, *Münchener med. Wochenschr.*, June 20, 1911.

The possible occurrence of a typhoid splenic abscess must be kept in mind when there ensue atypic remittent or intermittent febrile exacerbations in the wake of typhoid fever or typhoid recrudescence. Diagnostically there must also be taken into consideration localized pain, palpable splenic tumor, and manifestations in the pleural cavity (Röntgen picture). If a definite diagnosis cannot be arrived at on the hand of aforementioned symptoms, an exploratory puncture should be soon resorted to. The rational treatment consists in the opening of the abscess, which procedure permits of a favorable diagnosis. MILL.

**The Clinical Picture of Chronic Tonsillary Infection**—PÄSSLER, *Deutscher Kongress f. innere Medizin*, April 19 to 22, 1911.

Author concludes that polyarthritis and the usual rheumatic complications, as endocarditis, myocarditis and chorea minor, furnish but a partial clinical picture of the chronic tonsillar infection. The latter also gives rise to mild symptoms of general infection and intoxication, to sepsis, cyclic albuminuria, and possibly also to recurrent appendicitis. MILL.

**Pneumococcus Peritonitis**—H. B. STONE, *Johns Hopkins Hospital Bull.*, July, 1911.

The cases of pneumococcus peritonitis fall into two groups—the encapsulated and the diffuse forms, each of which presents a characteristic picture. The encapsulated form begins with a sudden onset, in a number of cases following an indiscretion in diet, with acute abdominal pain, vomiting and fever. In an overwhelming majority of cases, but not in all, there is diarrhea generally characterized by the very fetid odor of the stools. The local abdominal signs at this stage and in this form are not very pronounced. The

vomiting stops in from 12 hours to a few days. The fever, never very high, persists from 8 to 10 days. The diarrhea is the last of these early symptoms to cease. After 10 days or 2 weeks, local abdominal disturbances become more pronounced. The pain, which may have stopped, begins again, and instead of being general, becomes localized, nearly always in the hypogastric region. Fullness, gradually but steadily progressing, is noticed. Over this distended area dulness on percussion, fluctuation, and occasionally edema of the abdominal wall develop. These symptoms, again accompanied by fever, become more pronounced, and unless interrupted by death or operation, a spontaneous rupture nearly always through the umbilicus affords escape for the pus. Three stages may thus be recognized—peritoneal invasion, accumulation of exudate, and spontaneous rupture. The prognosis in this form, which undoubtedly represents a relatively benign infection, is good. In the diffuse form of the disease, the symptoms of onset are the same—sudden abdominal pain, vomiting, diarrhea, fever—but they are all much more intense than in the localizing type of infection. The fever, which is perhaps the most objective sign, is always quite high, often ranging well above 104 deg. F. In these cases the virulence of the infection is much greater than the natural defense of the individual. Death may occur in 24 hours. Where the course of the disease is less abrupt, there is often a brief apparent improvement at the end of about 48 hours. In a short time, however, the symptoms grow more marked, abdominal distension, tenderness, perhaps movable dulness become apparent. In short, the picture of peritonitis develops, with interesting qualifications, rigidity as a rule being far less marked than the other symptoms would seem to justify, and there is diarrhea instead of constipation. There is a high leucocyte count, very elevated temperature and profound toxemia. The prognosis is exceedingly grave. No such case has survived unless operated on.

WESTERN.

**Amebic Dysentery**—AXISA, *Archiv f. Verdauungskrankheiten*, Vol. XVI, No. 6.

An exact representation of the clinical picture of amebic dysentery and a description of the symptoms of dysentery due to bacterial activity. Except in its chronic forms, amebic dysentery is mostly accompanied by moderate temperature elevation, i.e., 37.5 to 38.5 deg. C. Cases concurring with high fever and chills, and cerebral manifestations must be classed among the mixed forms which are due to a secondary invasion of bacteria.

WESTERN.

**Are Pneumonia and Rheumatism Specific Infections?**—T. G. McCONKEY, *Med. Rec.*, June 3, 1911.

Pneumonia and rheumatism are not specific infectious diseases,

like typhoid or smallpox, but each is a mere symptom-complex dependent upon and secondary to tuberculous vegetations or lesions on the pleura, pericardium, endocardium, or periarticular tissues. The streptococcus normally present in the mouth and nasal cavities is the most frequent secondary invader of this abnormal tissue; but staphylococci, Friedländer's bacillus and the specific microorganisms of typhoid, diphtheria, gonorrhea, etc., may also be secondary invaders as well. Whether the symptom-complex called pneumonia or the one called rheumatism occurs depends upon the accident of the location of this damage of tuberculous causation. If situated on the pleura, pneumonia is the diagnosis provided consolidation occurs, otherwise it is called pleurisy. If situated in the joints alone or in connection with the endo- or pericardium, it is diagnosed rheumatism. If situated on the endocardium alone and not followed by consolidation of the lung, as it frequently is, it is called endocarditis; but if consolidation occurs it is erroneously called pneumonia complicated with endocarditis. WESTERN.

**The Etiology of Iritis**—R. A. YELD, *British Med. Jour.*, May 13, 1911.

Syphilis accounts for 45 per cent. of the cases of iritis. Gonorrhea is a frequent cause and a relapse is common in such cases. Toxemia arising from influenza, pyemia, nephritis, parotitis, diphtheria, diabetes, and tuberculosis is also a cause of iritis. Gout and osteo-arthritis cause about 1 per cent. of iritis cases. SACHS.

## RESPIRATORY AND CIRCULATORY ORGANS

**The Shape of the Thorax due to Muscular Action**—S. WEST, *St. Bartholomew's Hospital Jour.*, May, 1911.

The round shape of the normal chest is due to muscular action. It is the position of equilibrium between the pull of the opponent muscles, those which expand and those which contract the chest. This is proved by the peculiar change in shape which occurs in some cases of hemiplegia when the paralysis affects the muscles of the chest. Then as the patient lies upon the back in bed, the affected side becomes curiously flattened. A similar explanation may be applied to the flattening which is observed after acute pleurisy or pneumonia. This flattening is often referred to adhesions which have formed between the two layers of the pleura. But it is too marked to have developed in this way and occurs too soon after the attack, and, again, it disappears too quickly after convalescence. The true explanation is that the inflammation has spread from the pleura to the intercostal muscles and so they are paralyzed and do not recover until the inflammation has passed. SACHS.



**Differential Diagnosis between Dry Pleurisy and Intercostal Neuralgia—**

E. SCHEFELMANN, *Berliner klin. Wochenschr.*, June 12, 1911.

The pain in intercostal neuralgia is increased when the body is bent toward the diseased side; in dry pleurisy the pain increases when the body is inclined toward the unaffected side. In pleuritis the pleura becomes tense on the convex side of the laterally inclined trunk, and pain is the natural result. In intercostal neuralgia, on the other hand, the intercostal nerves sustain a painful pressure on the concave side which is due to the approaching ribs. MILL.

**Abdominal Pain and Tenderness, Muscular Rigidity and Pseudoperforative or Pseudoperitonitic Symptoms in Thoracic Disease—Pneumonia and Pericarditis—**A. R. EDWARDS, *Jour. A.M.A.*, June 17, 1911.

Pneumonia, pleurisy and pericarditis, at their very onset, may present absolutely no symptoms other than the abdominal findings. These phenomena of invasion may completely resemble appendicitis, peritonitis of other etiology, or even the collapse of perforation. Diagnostic errors and unnecessary operations may be unavoidable. Immediate operation is imperative and the small percentage of error is negligible in comparison with the benefits of early operation in genuine indications (particularly as 80 per cent. of patients operated on under a mistaken diagnosis, recover). The tenderness does not always remit with deep, flat pressure, and relaxation of the abdominal parietes, between respirations, is not invariable. The general symptoms do not invariably overshadow the local, the latter at times being the more salient. WESTERN.

**Clinical Observations on Congenital Heart Disease—**R. W. S. WALKER, *Heart (London)* May, 1911.

Exclusive of other lesions, such as septal defects, there appear to be at least three clinical groups of pulmonary stenosis: (1) cases in which the signs seem to indicate a constriction in the neighborhood of the pulmonary valves (high stenosis), (2) cases in which the signs seem to indicate a constriction and incomplete fusion of the infundibulum with the body of the right ventricle (low stenosis), (3) cases in which there are evidences that the ductus arteriosus is also patent. Patent ductus arteriosus may give rise to a water-hammer pulse and capillary pulsation. In many cases of congenital heart disease and more especially when there is evidence of ductus arteriosus patency, an abnormal zone of basal cardiac dulness is present. There seems to be evidence that where pulmonary stenosis is accompanied by patency of the ductus arteriosus, the symptomatology is less severe and life more prolonged. A large percentage of congenital heart disease, associated with pulmonary stenosis,

gives a definite history or family history of rheumatic infection or a history of cardiac disease in other members of the family.

SACHS.

**Orthodiagraphic Examinations concerning the Size of the Heart in the Tuberculous**—P. KERSTEN, *Deutsche med. Wochenschr.*, May 25, 1911.

In incipient cases of pulmonary tuberculosis as well as in advanced cases of the affection in which there was no general emaciation, author found a high percentage of markedly small hearts. A small heart, therefore, may be of import in determining the predisposition to tuberculosis.

MILL.

**The Heart in Pulmonary Tuberculosis**—J. FÜRBRINGER, *Beiträge zur Klinik d. Tuberkulose*, Vol. XVIII, No. 3. 1911.

Description of the various forms of cardiac disturbances as they occur in the tuberculous; author deals with the anomalies of position, size, activity, and with the auscultatory phenomena. He concludes that many, apparently neurogenous, cardiac disturbances in the course of pulmonary tuberculosis in reality rest upon an organic foundation (toxic impairment of the myocardium). On the other hand, if there exists an apparent purely nervous cardiac affection, the possible presence of an organic lesion, especially tuberculosis, must be kept in mind.

FRY.

**Syphilitic Affections of Heart and Bloodvessels**—H. C. JACOBÆUS, *Deutsches Archiv f. klin. Medizin*, Vol. CII, Nos. 1 and 2.

The Wassermann reaction has demonstrated that syphilis is much more frequently the cause of general degenerative and arteriosclerotic processes than is assumed by pathologists. Aortic insufficiency is probably due as often to arteriosclerotic changes than to the secondary appearance of syphilitic processes in the sinus of Valsalva (dilatations of the aorta opposite the segments of the aortic valve).

WESTERN.

**Syphilitic Disease of the Aorta**—H. GRAU, *Zeitschr. f. klin. Medizin*, Vol. LXXII, Nos. 3 and 4.

Syphilitic affections of the aorta occur very frequently; they supervene especially during middle life and do not, as a rule, cause subjective disturbances before the stage of decompensation has set in. Syphilitic disease of the aorta may occur soon after the infection; it may not show any symptoms for a long time. Physical diagnostics furnish some, although not very definite, special signs to demonstrate the luetic character of the affection. The enlargement of the left ventricle is generally not as marked as in other forms of aortic insufficiency; conversely, the capillary pulse and the double sound over the cruralis are not so marked. The patients

are pale, somewhat cyanotic and exhibit subicteric coloration. Psychic changes, especially a state of fear and confusion with hallucinations, seem to be characteristic of syphilis of the aorta. The Wassermann reaction is mostly positive; but there are exceptions. The cardiac affection may be due to a mixed etiology; the disease may be the result of lues and another infection; it runs a rapid course when failing compensation has ensued. WESTERN.

#### ALIMENTARY TRACT

**Fuld's Procedure for the Direct Demonstration of Free Hydrochloric Acid in the Stomach Contents**—E. SCHÜTZ, *Zentralblatt f. innere Medizin*, 1911, No. 21.

Fuld's procedure for the demonstration of free acid in the stomach (see *ARCHIVES OF DIAGNOSIS*, Vol. IV, p. 91) was tried by author in a great number of cases. He confirms the statements of Fuld. Positive reaction indicates with certainty the presence of free HCl. Author administers a solution of 2 grams sodium bicarbonate in 50 c.c. water; he examines the patients while they are in the erect posture maintaining that hereby better results are obtained than when they occupy the recumbent position. Sounds which are audible during fermentation processes in the stomach are of an entirely different character than the effervescence due to the presence of free HCl. If the free HCl is considerably diminished (below 15) the effervescence will not ensue; if free HCl is absent and lactic acid is contained in the gastric contents the characteristic effervescence will not occur. WESTERN.

**Quantitative Determination of Dissolved Proteids in Gastric Contents**—W. WOLFF and P. JUNGHANS, *Berliner klin. Wochenschr.*, May 29, 1911.

According to authors a large amount of dissolved albumin in the gastric contents, in the presence of small pepsin and HCl contents, appears to speak for the existence of gastric carcinoma. MILL.

**Examination of the Gastric Function of Children by Means of a Test-Breakfast**—F. SEILER, *Archiv f. Kinderheilkunde*, Vol. LV, Nos. 3 and 4.

The test-breakfast for the more precise diagnosis of gastric disturbances may also be employed in children. Sahli's flour soup is well adopted for the purpose. The amount of the soup to be ingested has to be regulated according to the age of the children. When the functions are normal there will invariably be found an excess of gastric acid; this is even the case in infants between the 7th and 12th month of life. Disturbances of motility and secretion may be determined by means of the test-breakfast as readily in children as in adults. MILL.

**A Study of the Alterations of the Hydrochloric Acid in the Gastric Juice due to Carcinoma of the Stomach**—G. GRAHAM, *Quarterly Jour. of Medicine* (London), April, 1911.

Carcinoma of the stomach causes definite changes in the amount of active acid and mineral chlorids present in the gastric contents. The increase in the mineral chlorids may be an earlier sign of carcinoma than the diminution of the active acid. These changes can be observed in the great majority of cases. This condition can be accounted for by the secretion of an alkaline fluid in the stomach which neutralizes the acid. The alkaline fluid is most probably secreted by a malignant growth which has begun to ulcerate.

SACHS.

**The Position of the Stomach as determined by the Röntgenogram**—TALMA, *Berliner klin. Wochenschr.*, May 29, 1911.

The prevailing opinion according to which the stomach is situated in the left hypochondrium, to the left of the median line, and the pyloric portion is the lowest part of the stomach situated in the neighborhood of the umbilicus, is erroneous. After ingestion of bismuth-rice the stomach becomes but partly filled; the distal part to the right of the median line, i.e., the pylorus, remains empty. Inflation of air and röntgenologic examination and percussion confirm author's contention.

MILL.

**Acute Gastric Dilatation**—HELLENDahl, *Monatsschr. f. Geburtshilfe u. Gynäkologie*, Vol. XXXIII, Nos. 1 and 2.

There exists primary and secondary dilatation of the stomach and primary and secondary duodenal obstruction. In primary duodenal obstruction one has generally to deal with adhesions in the small pelvis causing tension of the mesentery. Primary acute gastric dilatation ensues either by direct injury of the innervation or through infection, which also causes a disturbance of innervation. It is clinically wrong to separate duodenal obstruction from gastric dilatation. Gastric lavage, and especially placing of the patient in knee-elbow posture, are of therapeutic value.

MILL.

**Röntgen Diagnosis of Round Gastric Ulcer**—F. DE QUERVAIN, *Münchener med. Wochenschr.*, April 25, 1911.

The smallest prominence of the small curvature of the stomach in the Röntgen-ray picture points to an existing ulcer, but a straight and uniform contour of the small curvature does not speak against an ulcer. The more pronounced and enduring the contraction, the greater is the probability of its organic causation. Superficial, soon disappearing or multiple contractions point to a purely functional occurrence. When the location remains the same in a number of

examinations, the abnormal condition is caused by an ulcer; a fluctuating seat of the contraction indicates its functional character.

MILL.

**Perforation of Gastric and Duodenal Ulcers**—G. PÉTRÉN, *Brunns' Beiträge z. klin. Chirurgie*, Vol. LXXII, No. 2.

Vomiting occurs in more than half the cases of perforating gastric or duodenal ulcer. It stands in immediate connection with the beginning of the perforation. The symptomatology comprises furthermore muscular rigidity and pressure sensitiveness; pulse and temperature are also of importance. A perforating ulcer may still permit of a fair prognosis provided a radical operation is performed during the next 12 hours, and the pulse frequency is 100 or less; the prognosis is rather bad when the pulse frequency is 120 or above.

MILL.

**Perforating Duodenal Ulcer**—J. A. LICHTY, *N. Y. Med. Jour.*, July 1, 1911.

Pain is the most important symptom of duodenal ulcer. The description of it is usually so definitely, promptly and accurately given by the patient that it is unnecessary for the examiner to interject any question. In fact, such interjections often only mar the accurate description. Pain comes at first from 3 or 4 hours after meals and at 4 or 5 o'clock in the morning. Later, after the patient has begun to diet, which usually means a marked reduction in the amount of food taken, the pain comes earlier, 1 or 2 hours after meals, or at 1 or 2 o'clock in the morning. The patient will not always admit that it is a pain. It is described as a "gnawing feeling," a "hungry feeling," or a "peculiar empty, or all gone feeling." It is relieved by eating. It is occasionally accompanied by nausea. It comes in periods, after intervals of several months, or a year, or more. It disappears and recurs without any apparent cause. Over-fatigue or nervous strain is more frequently given as the cause than indiscretions of diet. As the attacks recur, vomiting is more likely to be a symptom, until vomiting is finally the chief, and frequently an alarming symptom. These cases at operation always show an extensive scar or marked adhesions about the duodenum or pylorus. The patient is young, before middle life, or at least refers the onset of the symptoms to earlier years. When such a history is given in an uncomplicated case, a physical examination adds little to our knowledge. Rather definite tenderness to the right of the median line and above the umbilicus, elicited by pushing the index finger in towards the body of the vertebræ, across which the pancreas lies, will be found in the majority of cases. It differs from the tenderness found in gall-bladder disease in that it is not increased by deep

breathing. Author considers this an important diagnostic sign. In cases of long standing there may be gastric dilatation and the associated symptoms. WESTERN.

**Pain and Gastric Carcinoma**—B. ERLANGER, *Archiv f. Verdauungskrankheiten*, Vol. XVI, No. 6.

The pain due to gastric carcinoma is not always taken into consideration when forming a diagnosis. Under carcinoma pain author understands the painful states which are caused by ulcerative processes, adhesions and malignant neoplasms on the posterior wall of the stomach that manifest themselves clinically as intercostal neuralgia. In instances where there is a vague symptomatology this phenomenon may be of value in deriving a diagnosis. WESTERN.

**Intestinal Motility and Motor-Secretory State of the Stomach**—JONAS, *Wiener klin. Wochenschr.*, June 1, 1911.

Intestinal motility is generally dependent upon gastric motility. Hypermobility of the higher intestinal portions, however, may go hand in hand with normal or reduced motility of the lower intestinal segments. An obstruction of the pyloric orifice of cicatric-carcinomatous or spastic nature reduces intestinal transit. The greater the obstruction the slower is the passage through the intestine. There is no definite relation between the acid degree of the stomach and the motility of the bowel. MILL.

**Some Problems in Gastrointestinal Surgery**—J. M. T. FINNEY, *Jour. A.M.A.*, June 3, 1911.

Gastrointestinal symptoms may be extremely difficult to interpret promptly, and at times may be most misleading. In the matter of interpretation of the findings at operation great latitude will be observed. In the present imperfect state of our knowledge speculation must, of necessity, play a great part in accounting for the various phenomena that are presented on the operating table. What may be considered by one person to be cause will just as surely be believed by another, just as competent, to be effect. Take the matter of the sagging of the colon—some explain it on anatomic grounds, a congenital defect; others think it is acquired, and when so acquired no two observers will explain in the same manner the process by which it has been acquired. Take also the matter of adhesions. Their frequency is admitted by every one, but the method of their formation is debatable ground. Again, take the matter of the relationship which a chronic adherent appendix bears to the various gastrointestinal disturbances which are grouped under the general heading of neuroses. Everyone will admit that there is a definite relationship between these conditions, but as to just how far the one is really dependent on the other a great diversity of opinion will be found to exist. WESTERN.

**Gastric and Duodenal Adhesions in the Gall-Bladder Region, and their Diagnosis by the Röntgen Rays**—G. E. PFAHLER, *Jour. A.M.A.*, June 17, 1911.

Adhesions due to gall-bladder disease cause a definite displacement of the stomach and duodenum which is recognizable by the Röntgen rays. The evidence of adhesions is best obtained fluoroscopically in the upright position, in which the errors of pressure must be eliminated, but plates should also be made in every case for record and for more detailed study.

WESTERN.

**The Clinical Aspect of Acute Appendicitis in Children**—H. CALLINSON, *Practitioner* (London), July, 1911.

Pain is constant in acute appendicitis in children, and always the initial symptom, but the danger is that it may be ascribed to ordinary gastrointestinal disturbance. A history of recurrent attacks of stomach-ache should always give rise to a suspicion of appendicitis until the contrary is proved. Nausea and vomiting may be slight or absent even when a generalizing peritonitis is present. Abdominal rigidity is often ill-marked and extremely difficult to estimate. Cases in which pyrexia has been present for some time before pain is complained of, are, in all probability, not appendicitis. A sudden drop in temperature after an initial rise is, as a rule, a danger signal, and it must not be forgotten that a normal or even subnormal temperature may accompany an infection of the most virulent and lethal character.

SACHS.

**Palpation of the Appendix**—RUDNITZKI, *Archiv f. Verdauungskrankheiten*, Vol. XVI, No. 6.

The appendix is palpable in from 12 to 13 per cent. of all cases which come to examination. Higher figures are erroneous as they are based upon the palpability of every sausage-shaped formation in the right iliac fossa.

WESTERN.

**The Dilatation Test for Chronic Appendicitis**—W. A. BASTEDO, *Am. Jour. Med. Sci.*, July, 1911.

The test is performed as follows: A colon tube is passed 11 or 12 inches into the rectum and air injected by means of an atomizer bulb. If, as the colon distends, pain and tenderness to finger-point pressure become apparent at McBurney's point, there is appendicitis. The test is not needed in an acute case, in fact it would be contraindicated. The indication for the test is a suspected chronic or latent appendicitis, or any persistent digestive or abdominal disturbance in which no cause can be found for the difficulty. By employing this test one may be able to distinguish between an inflamed appendix and a right-sided pelvic trouble. Pain and tenderness in a right-sided chronic salpingitis or cystic ovary some-

times result from the colon dilatation, but the tenderness is regularly less acute, is low down in the abdomen, and extends toward the middle line.

WESTERN.

**A Hitherto not Described Phenomenon in Recurrent Appendicitis—**

N. WOLKOWITSCH, *Zentralblatt f. Chirurgie*, 1911, No. 22.

In patients who have had repeated attacks of appendicitis there ensues an alteration of the abdominal walls on the right side in the region of the broad abdominal muscles. This alteration evinces itself in the form of a more or less pronounced relaxation of the abdominal muscles of the right side.

MILL.

**Movable Cecum—P. DUVAL, *Paris Médical*, June 3, 1911.**

Movable cecum occurs mostly in women (75 per cent.), and during adolescence (between the 15th and 25th year of life). The condition is evinced by three symptoms,—colic, constipation and typhlatony with typhlectasia. The pain element predominates; the pains belong to the chronic appendicitis type of pains. On palpation there is tenderness at McBurney's point. The acute pains are accompanied by vomiting, pallor, a sensation of sudden exhaustion, nausea, and occasionally by loss of consciousness. They often cease abruptly when the patient changes his position. The chronic pains provoke a nauseous condition, loss of appetite and an apathic state resembling that in the wake of intestinal intoxication. The constipation is varying, irregular, is not influenced by diet and by treatment in general, and is occasionally interrupted by diarrheal attacks. Typhlatony and typhlectasia are evidenced by an examination of the iliac fossa. In lean subjects there is occasionally seen a curved distension in the cecal region. This curve may be the seat of the visible contractions; one may be able to take a hold of it and be thus able to ascertain its contours. It feels elastic to the touch like an air pillow. On palpation a large cecum, gurgling under the fingers, can always be made out.

ZIMMER.

**Typhlatony and allied Conditions (Chronic Appendicitis, Movable Cecum, Typhlectasia and Habitual Torsion of the Cecum)—FISCHLER, *Münchener med. Wochenschr.*, June 6, 1911.**

There are conditions of pain and irritation in the region of the cecum which are localized within the latter and are not due to the appendix. These conditions of the cecum depend upon a functional insufficiency of its motor activity and lead to typhlatony, which latter exhibits an independent clinical picture. An abnormal mobility of the cecum has per se nothing to do with these conditions, but the anatomic abnormality may possibly predispose to them.

MILL.



**Acquired Diverticula of the Sigmoid**—A. D. DUNN and P. G. WOOLLEY, *Am. Jour. Med. Sci.*, July, 1911.

The symptoms of diverticulum disease may be manifold and difficult of interpretation. The diagnosis is seldom easy, rarely certain, and often impossible. To appreciate the possibility of a diverticulum is a long step in the direction of a diagnosis, which must be made largely by exclusion. The most easily recognizable condition is that of the so-called "left-sided appendicitis." There is pain, gastric disturbances, tenderness, and rigidity in the left lower quadrant, with temperature and leucocytosis; abscess formation often appears later. Another class of cases that is moderately easy of recognition is that of chronic hyperplastic sigmoiditis. WESTERN.

**Membranous Enteritis following Typhoid Fever**—ORTNER, *Archiv f. Verdauungskrankheiten*, Vol. XVI, No. 6.

Author confirms the observation of v. Czyhlarz that enteritis membranacea may appear in the wake of typhoid fever. He has met with this form of enteritis six times after the occurrence of typhoid fever. WESTERN.

**Hypertrophied Papillæ of Morgagni causing Rectal Symptoms**—A. C. MAGAREY, *British Med. Jour.*, July 8, 1911.

The papillæ of Morgagni when hypertrophied resemble in shape and size the writing end of an ordinary lead pencil. They must be distinguished from the small fibrous polyp which sometimes forms on the top of an internal hemorrhoid. The symptoms attributable to the hypertrophied papillæ are—(1) irritation which is by far the most frequent cause of complaint and in a large percentage of patients suffering from pruritus ani these hypertrophied papillæ generally augment the trouble, if indeed they are not the sole cause. In a series of 53 patients suffering with pruritus ani, they were present in 13 cases, and in practically all these cases cauterization or removal relieved or cured the condition; (2) pain was the chief symptom in 12 cases; careful examination in these cases revealed nothing but hypertrophied papillæ and in every case cauterization afforded relief; (3) a sensation of mass in the rectum is a very common symptom. When much hypertrophied the papillæ can be readily recognized by digital examination as small shotty nodules. They can always be seen at the ano-rectal juncture by means of a speculum. SACHS.

**The Pancreas Reaction of Cammidge**—H. PRIBRAM, *Prager med. Wochenschr.*, 1911, No. 21.

Cammidge's pancreas reaction is no positive indicator either for normal or disturbed pancreatic function. The reaction is generally

negative when the pancreas is normal; in diseases of the pancreas the reaction may be positive, but it is not necessarily so. In diabetes it may be one way or the other. In pancreatic intoxication, icterus, or hepatic cirrhosis there is generally a negative reaction. MILL.

## NERVOUS SYSTEM

**Certain and Simple Method of Obtaining the Knee-Jerk**—C. POPE, Jour. A.M.A., June 10, 1911.

The patient should sit in an ordinary straight-backed office chair, relaxing the entire body as far as possible. The feet are then pushed forward so as to extend the lower limbs comfortably. This position produces complete relaxation of the flexor groups of muscles of the lower limbs, and, as it is these groups of muscles that inhibit the response, it seems rational to believe that the inhibition would be prevented. With the limbs in the position indicated, and with the ends of the toes of both shoes on a line, the clothing is drawn reasonably snug over the patella with the thumb and forefinger of the left hand in right-handed individuals. The three remaining fingers and the palm of the hand should rest on the thigh just above the patella. With a percussion hammer a gentle tap is given the tendon and its response or the absence thereof can be both seen and felt, for the palm and three fingers of the left hand will give an excellent index of the prominence and activity of the response. In this position, reinforcement is most satisfactorily performed, and a wider range of action obtained. WESTERN.

**The Urinary Reaction for Progressive Paralysis with Liquor Bellostii**—H. TITUS, Wiener med. Wochenschr., March 20, 1911.

A positive reaction is neither characteristic of progressive paralysis nor does it stand in relationship to the intensity and eventual remissions of the disease. The reaction may be negative in grave cases of paralysis; on the other hand it may be positive in the presence of various internal diseases, nervous affections and other psychoses. MILL.

**The Urinary Reaction for Progressive Paralysis with Liquor Bellostii**—H. M. STUCKEN, Münchener med. Wochenschr., April 18, 1911.

The reaction is not specific for progressive paralysis, and it is no criterion for the existence of an organic disease of the brain. It has no definite diagnostic value. MILL.

**Cystoscopic Findings in Early Tabes Dorsalis**—I. S. KOLL, Chicago Med. Rec., April, 1911.

Vesical symptoms are among the very first in incipient tabes.

The bladder picture which is found, in toto differs quite from any other seen through the cystoscope. The most striking changes are found at the ureteral orifices which, instead of showing the rhythmic, uniform, sphincter-like action which each extrusion, allows the urine to flow out without any evidence of a muscular contraction. In some of the cases this rigidity may not be complete, and thus closely resemble the rigidity of the sluggishly acting pupil. There is a more or less marked hypertrophy of the interureteric ligament manifested by increased vascularization and distension of the arteries; the ridge between the two orifices is distinctly higher and stands out well above the remainder of the mucosa of the bas fond. A third point to make up the diagnostic triad is the typical trabeculization, or the "balken" of the Germans. This differs from the picture given by an overworked bladder due to obstruction by showing the trabeculæ only on the lateral walls of the bas fond, and apparently continuous with the interureteric ligament at either end. The trabeculæ, too, are finer and more nearly resemble the papillary muscles of the heart. In no case in the class under consideration did author see any trabeculæ in the median line, in the fundus, or extending high up on the lateral vesical walls. WESTERN.

**Blood Pressure in Mental Disorders**—S. G. LONGWORTH, *British Med. Jour.*, June 10, 1911.

Maniacal and melancholic states are not associated with any constant modification of the arterial blood pressure, nor with any marked departure in it from the normal. This is also true of other types of mental disorders with the exception of congenital states in which the blood pressure tends to be low. SACHS.

**Acute Encephalitis in the Course of Pneumonia**—J. MOLLARD and A. DUFOURT, *Lyon méd.*, 1911, No. 19.

In a patient, 44 years old, who was affected with pneumonia, there developed on the sixth day acute delirium together with opisthotonos, mild convulsions and contractions of the extremities. Pneumococcal meningitis was suspected, but had to be ruled out because the spinal fluid exhibited no abnormal constituents. Death occurred after a few days. The necropsy showed the characteristic lesions of acute encephalitis. ZIMMER.

**Diagnosis of Tumor or Abscess Formation in the Temporo-Sphenoidal Lobes**—F. KENNEDY, *Jour. A.M.A.*, June 3, 1911.

Symptom-complex of tumor in the right temporosphenoidal lobe in a right-handed person.—Epileptiform convulsions of varying severity and frequency; dreamy states or analogous pathologic psychic conditions; crude subjective sensations of smell or taste with or without involuntary reflex movements of mastication. Sub-

sequent to major attacks; in most cases, transient weakness of the left lower facial muscles, usually most evident on emotional expression; less often the left arm and leg temporarily paretic; left abdominal reflexes diminished or absent, deep, increased; the left plantar reflex may be of extensor, and the right of flexor type. Bilateral papilledema usually of greater intensity on the right side. Reflex change and motor symptoms on the left side, at first merely postepileptic, but later become persistent phenomena. No word-forgetfulness after major attacks or at other times. No speech defect whatsoever. Symptom-complex of tumor in the left temporosphenoidal lobe, in a right-handed person. Difficulty in naming objects seen and recognized; later, word-forgetfulness in conversation; later, inapposite words and phrases, with instant recognition of mistake when made, but inability to prevent perseveration of verbal errors. Reading aloud and writing to dictation are well performed; spontaneous writing poor. Epileptiform convulsions of varying severity and frequency; dreamy states or analogous pathologic psychic conditions; crude subjective sensations of smell or taste, with or without involuntary reflex movements of mastication. Subsequent to major attacks; in most cases, transient weakness of the right lower facial muscles, usually most evident on emotional expression; less often, the right arm and leg temporarily paretic; right abdominal reflexes diminished or absent; deep, increased; the right plantar reflex may be of extensor and the left of flexor type. Bilateral papilledema, usually of greater intensity on the left side. Reflex change and motor symptoms on the right side at first are merely postepileptic, but later become persistent phenomena. The existence of hemianopia would, of course, indicate precisely the side of the lesion.

WESTERN.

**Distortions of the Visual Fields in Cases of Brain Tumor**—H. CUSHING and G. J. HEUER, Johns Hopkins Hospital Bull., June, 1911.

In a series of 200 cases of brain tumor it has been possible in 123 cases to secure reliable perimetric charts. These have shown (1) normal fields in 27 cases; (2) simple color interlacing or inversion (dyschromatopsia) with more or less constriction, but without other field distortion in 53 cases, and (3) hemianopsia, or a tendency toward this defect, in 42 cases.

WESTERN.

## URINARY ORGANS—MALE GENITALIA

**Anomalous and Obscure Symptoms associated with Movable Kidney**—W. B. CLARKE, Practitioner (London), May, 1911.

Vomiting is well known to be associated with what may be described as the gastric type of movable kidney. As a rule, however, it is exceedingly severe and is associated with other symptoms

of movable kidney, so that it is readily ascribed to its true cause. The author's cases are, however, one and all, remarkable from the fact that, though in some instances the vomiting was severe, no associated signs or symptoms were present to give aid in the diagnosis, and thus the true significance of the vomiting was for a long time unappreciated. If, however, one reviews carefully the condition of vomiting which existed in every one of these cases, it is clear that, with the exception of the single fact that the patients were quite well and in the enjoyment of their usual health between the attacks, there is little to distinguish this type of vomiting from that associated with many other ailments. Great intestinal distension was present in most of the attacks, and the kidney was found to be movable.

SACHS.

**Pyelography and the Early Diagnosis of Dilatation of the Kidney—**

J. W. T. WALKER, *Lancet*, June 17, 1911.

It is not possible by symptoms alone to make a diagnosis of early dilatation of the kidney. The best method of making a diagnosis in this condition is pyelography. Völker and Lichtenberg, who are the originators of this method, inject a 20 per cent. solution of collargol, which is opaque to the X-rays, into the renal pelvis, and obtain a shadow which shows the contour of the renal pelvis. A catheter is passed into the renal pelvis by means of a cystoscope so that the eye of the catheter enters the pelvis, the contents of which are allowed to run off. The cystoscope is removed leaving the catheter in position. Author, by means of a large glass syringe, then injects about 40 c.c. of a 10 per cent. solution of collargol which has been slightly heated. The fluid enters the pelvis by hydrostatic pressure by holding the barrel of the syringe as high as the free end of the catheter will allow. The syringe is then removed and the end of the catheter plugged. A radiogram is then taken. When this is finished, the fluid is allowed to syphon off. A hypodermic of morphin should be given half an hour before commencing the injection.

SACHS.

**Acute Unilateral Pyelonephritis—S. PRINGLE, Practitioner (London), July, 1911.**

Acute unilateral pyelonephritis is a condition which closely simulates the "acute abdomen" and has frequently been the cause of symptoms which have been put down to acute trouble in connection with the appendix or gall-bladder. The onset of this condition is acute with high temperature and rapid pulse. There is usually vomiting and headache, and in some cases rigors occur. The patient looks extremely ill and toxemic. Generally the local signs are marked. There is acute pain in the back and abdomen on the

affected side, which is rigid and tender, the tenderness being especially marked in the costo-vertebral angle. The kidney is often felt to be enlarged. The urine is usually acid and contains a trace of albumin, pus, a few red blood-cells and bacteria, generally a pure culture of *B. coli communis*. SACHS.

**Nephralgia**—BAZY, *Presse médicale*, June 7, 1911.

The term nephralgia should not be employed in cases with a discernible lesion; it should be reserved for such cases in which a definite pathological state cannot be demonstrated. ZIMMER.

**Acute Hematogenous Infections of the Kidney**—L. LOURIA, *N. Y. Med. Jour.*, June 3 and 10, 1911.

**Prognosis.** The renal infections compared with infections of other organs usually belong to a less virulent group. The prognosis hinges on the fact that a colon bacillus is the infective agent in 87 per cent. of the cases. This organism is noted for its comparatively mild degree of virulence; the destructive changes that it produces in the kidney are fully within the possibility of spontaneous repair. After removal of the predisposing causes, the acute cases of hematogenous infection have a tendency to recover completely. If the back pressure is not entirely eradicated, the renal condition may become chronic, giving rise to a pyonephrosis or to the so called "surgical kidney." Only in the rare instances of acute fulminating infection does the prognosis become grave. Here death may occur in the first 3 days. But it is impossible to determine the exact gravity of any individual case of this kind, for the number of observations recorded is as yet too meager from which to draw any definite conclusions. This uncertainty has led to marked difference of attitude with respect to treatment. WESTERN.

**Disorders of the Genitourinary Organs in Uricemia**—CONSTANT, *Jour. méd. de Bruxelles*, 1911, No. 23.

Author describes as symptoms of uricemia: augmentation of the excretion of urinary solids and decrease of urinary water, irritation of the bladder, urethritis, inflammation of vulva and vagina, pruritus vulvæ, cervical catarrh and herpes of the glans penis. ZIMMER.

**Tuberculosis of the Kidney in Women**—H. N. VINEBERG, *N. Y. Med. Jour.*, June 3, 1911.

Tuberculosis of the kidney in women, contrary to that in men, is rarely associated with tuberculosis of the genital organs. Every marked cystitis that resists the ordinary means of treatment, particularly the local application of silver nitrate through a Kelly's cystoscope, should be looked upon as probably due to tuberculosis

of the kidney. The cystoscope is of great value in diagnosis. With it one may find in a large percentage of cases characteristic changes in the ureteral orifice of the affected kidney. The orifice will be swollen and present a nipplelike projection, or it will be ulcerated and the ulcerative process may be seen to extend as a streak on the bladder wall. Patches of the ulceration studded with tubercles may be seen in other parts of the bladder. In some instances one will see only a few scattered tubercles on the bladder wall in the neighborhood of the trigonum. In still another class of cases the appearances in the bladder will correspond to those seen in severe cystitis, as that may be the only bladder lesion present, for experience has taught us that not all the cases of bladder disturbances in renal tuberculosis are due to a descending tuberculosis. WESTERN.

**Referred Penile Pain in Intussusception**—G. E. WAUGH, *Lancet*, June 3, 1911.

The occurrence of paroxysmal attacks of pain referred to the end of the penis and supra-pubic region in association with an intussusception appears not to have been recorded up to the present time. In 3 cases which the author records in children from 2 to 3 years old, the pain was paroxysmal in nature, and was sufficiently intense to make the patients cry out loudly and clutch the end of the penis.

SACHS.

#### FEMALE ORGANS OF GENERATION—PREGNANCY— PARTURITION—INFANTS

**Diagnosis of Tuberculosis of the Female Genitalia**—P. KROEMER, *Deutsche med. Wochenschr.*, June 8, 1911.

A positive diagnosis of tuberculosis of the female genital organs is only possible when the specific nature of the affection can be histologically proved on the hand of products of secretion, exploratory incisions and removed material, or by inoculation into animals. It is possible to make the diagnosis if the external genitals, the vagina, and the neck and body of the uterus are tuberculous. Tuberculosis of the adnexa, however, does not frequently call forth a discharge of cheesy tuberculous pus in which the tubercle bacilli may be demonstrated. Injection of old-tuberculin is of diagnostic value only when there is a pronounced local reaction. Non-occurrence of general and local reactions with tuberculin points to absence of a tuberculous process. One is justified to assume the presence of genital tuberculosis if an individual is hereditarily predisposed or exhibits the phthisical habitus with tuberculous stigmata in other locations, and if there ensues distension of the abdomen with ascites, and later palpable alterations in the adnexa or ulcerating changes in the genital mucous membranes.

MILL.

**The Hysteropexies**—G. K. DICKINSON, *Am. Jour. of Obstetr. and Diseases of Women and Children*, 1911, No. 4.

The symptomatologies of uterine deviations are collectively expressed under the term "uterine syndrome." They are induced either by a flexion or an associated condition. A uterus under slight retroflexion dragging on the broad ligament will produce a distress similar to a drag on any mesentery. If the displacement be continuous and to such a degree as to elongate the ligament, drag will cease and the woman will then have a retrodisplacement without symptom. If there be slight descensus the utero-sacral muscle will be put on tension and may contract in order to restore position. Irritation of this muscle gives considerable pain. It becoming paralyzed or atrophic, pain ceases. If the uterus be seized by a tenaculum and dragged upon, the first tissue to be put on tension is the utero-sacral muscle. This being severed, the next tissue to be affected is the broad ligament, but not until the parametrium has been severed is any strain put on the round ligaments, so, in the production of retroflexions and the causing of distress under normal conditions the important structures to be considered are the utero-sacral muscle and the uterine mesentery. In types of metritis and parametritis without lymph exudate do we more commonly find associated displacements distressing. Nerves in an inflammatory tissue seem to induce the sensation pain which is not normally their function. Hence it is that we have no distress in affections existing in healthy tissues. The extensive nerve supply of this pelvic organ very well explains the numerous reflex symptoms originating from it. Continued irritation sooner or later produces an exhaustion of the sympathetic plexus at the brim of the pelvis bilaterally. Exhaustion of this plexus leads to the possibilities of irregular vasomotor impulses, congestions, and organ functioning. With an exhaustion of this plexus stimuli may pass further up in the sympathetic, allowing of the perversion of normal impulses of the organs under their control. This will explain constipation, nausea, epigastric pulsations, and other abdominal phenomena of the "neurotic." According as the woman has some antenatal nerve defect or lax habit acquired in the education of life, will she be influenced by distresses. Will-power and self-control being in abeyance, the emotional will predominate and the patient have back-ache, posterior cephalagia and hysteria.

WESTERN.

**Prognosis of Septic Abortion.**—G. WINTER, *Zentralblatt f. Gynäkologie*, 1911, No. 15.

Among 100 septic abortions author found that 13 deaths were due to infection; in 4 cases he found non-lethal pyemia, and in 1 case non-lethal peritonitis; parametritis was encountered in 18,



and endometritis in 10 cases. The other 54 cases ran a normal course. The cases terminating in death were such with actively terminated abortion; all the cases of spontaneous abortion recovered. Hemolytic streptococci proved to be especially dangerous. When these are present no intra-uterine instrumentation should be planned. In the presence of avirulent germs, on the other hand, surgical intervention is not fought with danger. The vaginal secretion of every febrile woman with a septic abortion should be examined bacteriologically. Expectative treatment is indicated when hemolytic streptococci are present; in all other instances the uterine cavity may be cleaned out.

MILL.

**Eclampsia without Convulsions**—GUSSAKOW, *Zentralblatt f. Gynäkologie*, 1911, No. 21.

Report of two cases of eclampsia without convulsions. Author maintains that the convulsions are but a symptom of the eclamptic state. This symptom may be entirely missing in some cases. Eclampsia without convulsions is generally a very grave occurrence; the mortality is from 77 to 80 per cent. The infrequency of publications concerning this condition is due to the fact that its true nature is ordinarily not recognized.

MILL.

**The Association of Toxemia of Pregnancy with Hemorrhage**—R. DAVIES-COLLEY, *British Med. Jour.*, June 17, 1911.

Hemorrhage may be the principal sign of the toxemia of pregnancy. Hematuria has a great prognostic significance in eclampsia. Among 36 cases treated at Guy's Hospital, hematuria was present in 10 cases, 6 of which died—i.e. 60 per cent. Toxemia of pregnancy is very frequently found in association with concealed accidental hemorrhage, and it is very likely that a direct causal relationship exists between the two conditions. In a series of 13 cases of concealed accidental hemorrhage, 8 cases, or 61 per cent., presented some symptoms of toxemia of pregnancy.

SACHS.

**Auscultation of Fetal Heart Sounds**—R. TODYO, *Zentralblatt f. Gynäkologie*, 1911, No. 14.

Author employs a binaural stethoscope; by means of both thumbs the instrument is forcibly pressed down while the other fingers of both hands keep the uterus in position. Author could hear the fetal heart sounds between the 118th and 132d days.

MILL.

**Water Contents of the Blood in Nutritional Disturbances of Nurslings**—F. LUST, *Jahrbuch f. Kinderheilkunde*, Vol. LXXIII, No. 2.

The average amount of water in the blood of nurslings is 82 per cent.; this means from 3 to 4 per cent. more water than will

be found in the blood of older children. The blood-water curve and body-weight curve run nearly parallel in the first few weeks; later on this is not the case. Blood has the property to maintain its physiologic concentration. Only when there ensues marked loss of water (severe diarrheal evacuations), and when an intoxication prevails will a higher blood concentration be met with. Shortly before death the blood may apparently become again hydremic under certain conditions. In chronic disturbances, contrary to acute disorders, the water contents of the blood does not materially deviate from the norm. The water retention which begins with the general improvement also benefits the blood.

MILL.

**Viscosity of the Blood of the Healthy and Diseased Nursling**—F. LUST, *Archiv f. Kinderheilkunde*, Vol. LIV, Nos. 4 to 6.

The average blood viscosity degree of the healthy nursling determined by Hess's viscosimeter is 3.8; however, individual fluctuations may occur normally. In the new-born the viscosity is markedly increased; concurring therewith is found an increase of cellular elements, of hemoglobin and the entire dry blood substance. In later infancy the viscosity approaches that of the adult. The average degree between the 18th month and the 11th year of life is 4.1. Anemic nurslings show lower degrees of viscosity, but there does not exist a constant relation between viscosity degree and hemoglobin contents. All conditions tending to cyanosis increase the viscosity on account of the accumulation of CO<sub>2</sub>. There is a relation between viscosity and the water contents of the blood; high contents of water correspond with diminished viscosity, and vice versa. Introduction of physiologic salt solution increases the viscosity. Nutritive disturbances per se do not alter the degree of blood viscosity unless they concur with anemic conditions or loss of water.

MILL.

**Urinary Acidity in the Nursling**—O. LADE, *Archiv f. Kinderheilkunde*, Vol. LV, Nos. 3 and 4.

In the breast-fed as well as in the artificially nourished infant the urinary acidity is but little dependent upon the amount of ingested material; the acidity of the breast-fed nursling, however, is markedly lower than that of the artificially fed child. The acidity fluctuated between 0.3 and 0.4 c.c. 1/10 normal hydrate for 10 c.c. urine in the breast-fed, and between 1.2 and 2.9 in the artificially nourished infant. The urinary acidity often increases and falls with the specific gravity; an occasional increase of the one concurs with decline of the other. The phosphoric acid curve runs parallel with the acidity curve in the breast-fed as well as in the artificially nourished infant. The nitrogen curve generally rises and declines with the acidity curve.

MILL.

**Spasm of the Pylorus in Infancy**—J. L. MORSE, *Am. Jour. Dis. Children*, Vol. I, No. 5.

In most instances the infants are of the excitable, irritable and neurotic type. Spasm of the pylorus occurs in both the bottle-fed and the breast-fed, but oftener in the former than in the latter. The symptoms rarely ensue immediately after birth, but usually develop in the first few weeks, although they may not manifest themselves until the baby is some months old. The symptomatology of this condition varies considerably according to the amount of spasm present in the individual instance. In the milder cases there is frequent vomiting, which is at times explosive and at others not. It is often preceded and accompanied by evidences of gastric pain and distress. The amount of material vomited does not ordinarily exceed that taken at the last meal. The vomitus shows, as a rule, little or no signs of disturbance of digestion. There is a tendency to constipation, but the stools show plainly that a considerable proportion of the food ingested passes through the pylorus into the intestine. The disturbance of nutrition is not extreme. In the more severe cases there is visible peristalsis in addition to the symptoms already mentioned as characteristic of the milder type. These symptoms are more marked than in the mild cases, the stools show less fecal residue and the disturbance of nutrition is much greater. Many of these cases exhibit signs of motor insufficiency for a long time. The visible peristalsis may persist for weeks or months after the cessation of the vomiting. In the most severe cases there is also a palpable tumor at the pylorus. This tumor is usually small in comparison with that felt in congenital hypertrophic stenosis of the pylorus.

WESTERN.

**Edema occurring in the Course of Disease of the Gastrointestinal Tract in Infants**—H. T. ASHBY, *Practitioner* (London), May, 1911.

Edema usually starts from a week to a fortnight after the diarrhea has stopped, and often just when the child would appear to be improving. The edema is bilateral, and first appears on the dorsum of the feet, then on the back of the hands, and in severe cases the face becomes puffy and swollen, so that the condition closely resembles a case of renal disease. There is no vomiting and no rise in temperature, and the edema comes on slowly without apparently any cause. The urine is difficult to obtain, as these children pass very little urine, often only 3 or 4 ounces in the 24 hours. The urine is acid, turbid and smells very foul. In most cases where the gastrointestinal catarrh has persisted for some time, there is a small amount of albumin; but in a fair number of cases, even when the edema is greatest, there is not a trace of albumin. Microscopically there may be found a few leucocytes, but no blood or casts. The

edema is in no way connected with the condition of the kidneys. Although the appearance of the edema in the course of disease of the gastrointestinal tract is a serious symptom, there is by no means a fatal outlook, as quite a large number of the infants recover.

SACHS.

**Infection of the Urinary Tract in Children by Coliform Organisms—**

W. M. JEFFREYS, *Quarterly Jour. of Medicine* (London), April, 1911.

Author reports a series of cases of this infection. The ages of the patients range from 4 months to 11 years. The diagnosis was made by bacteriological examination of catheter specimens of urine, and only cases so diagnosed have been included in the series. The infecting organism was *B. enteritidis* in two instances, *proteus vulgaris* in four, and in the remainder the *B. coli communis*. There were 53 females and 7 males. In only 10 cases dated the trouble from some previous illness, generally an acute specific fever. In 43 of the 60 cases there was evidence of bowel trouble of one kind or another. With regard to the chief symptoms complained of, in 37 cases they pointed to bladder trouble, usually painful micturition; 3 cases complained of diarrhea and vomiting, 9 of abdominal pain, 5 had meningeal symptoms, 4 were debilitated, and in 2 cases there were no symptoms. Four cases were discovered in children suffering from some other illness, 21 cases began with symptoms pointing to bladder trouble, and 9 with symptoms suggesting pyelitis. In 30 cases there was no evidence to suggest the mode of onset. Examination of the urine showed that pus was present in nearly every instance, 56 cases out of 60; albumin was present in 45, and blood in 15 cases. The urine was acid in 39 cases, alkaline in 7, neutral in 1, and in the remaining 13 cases no note was made of the reaction. Only 21 cases were discharged as cured, that is to say, with no symptoms and no pus in the urine. Nine cases died. Of these 6 died of the urinary trouble, and 3 of some other disease. Twenty-three cases were discharged as improved.

SACHS.



### **Bibliography**

**A TEXT-BOOK OF MEDICAL DIAGNOSIS.** By JAMES M. ANDERS, M.D., Ph.D., LL.D., Professor of the Theory and Practice of Medicine and of Clinical Medicine, Medico-Chirurgical College of Philadelphia; Officier de L'Instruction Publique, etc., etc., and L. NAPOLEON BOSTON, A.M., M.D., Adjunct Professor of Medicine, Medico-Chirurgical College; Physician to the Philadelphia General Hospital; Pathologist to the Frankford Hospital. With 418 Illustrations in the Text and 25 Plates, 17 of them in Colors. Philadelphia and London, W. B. Saunders Company, 1911.

The authors have produced a work which is excellent from every point of view. In many respects—pre-eminently in that of freshness—it even surpasses the celebrated book of Sahli, the second American edition of which we have briefly reviewed in the last issue of the ARCHIVES. American text-book writers, like Drs. Anders and Boston, have the advantage over the average European, especially German author, in that they understand how to handle and present the subject matter. Appended to the description of the various affections there is a “summary of diagnostic features and laboratory diagnosis” which is very useful to the student as well as to the practitioner who must quickly find his proper diagnostic bearings.

The illustrations illustrate and are a very integral part of the book. H. S.

**DIFFERENTIAL DIAGNOSIS.** Presented through an Analysis of 383 Cases. By RICHARD C. CABOT, M.D., Assistant Professor of Clinical Medicine, Harvard University Medical School, Boston. Profusely Illustrated. Philadelphia and London, W. B. Saunders Company, 1911.

Dr. Cabot presents a book on diagnosis—by no means on differential diagnosis—on rather unique lines. It is not improbable that the idea of compiling this volume on, what really is, an analysis of cases, was conceived by him in his student days at Harvard, just when the case system of legal instruction was originated and exploited in and by that university. Be that as it may, the author had a clear concept of that which he wanted to accomplish. He has succeeded in writing a book which is highly interesting, but which is not proportionally useful to just that man whom he wishes to instruct. H..S.



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AND THE PROGRESS OF DIAGNOSIS AND PROGNOSIS

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## Special Articles

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### DEMENTIA PRECOX

By WILLIAM A. WHITE

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Dementia precox is a psychosis essentially of the period of puberty and adolescence, characterized by the outward appearances of a dementia tending to progress, though frequently interrupted by remissions. Upon the foundation of dementia are erected various psychotic symptoms, many of which show a marked tendency to episodic manifestations.

It is essentially a disease, as stated, of the period of puberty and adolescence, although it not infrequently manifests itself at a later date, particularly the paranoid forms. There has been a great deal of objection to the name "Dementia Precox," because of the fact that some cases develop considerably later in life than the adolescent period. For those who are anxious that the name should be significant of the thing named, it might be satisfactory to think of dementia precox not as a psychosis developing early in life, and therefore precocious, but as a psychosis in which the factor of dementia appears early, in other words, a psychosis in which the dementia is the precocious symptom, rather than an individual in whom the psychosis is precocious. Because of the further fact that the dementia is in many instances at least more obvious than real, and because a careful analysis of the psychology of these cases shows that the outwardly bizarre and erratic, and often silly symptoms have in reality a foundation which is rationally explainable, Bleuler



has suggested the name "Schizophrenia," which indicates, as we shall see later, a splitting of the psyche, an intrapsychic ataxia, which is considered by many to be the real fundamental symptom of the disease.

Heredity plays a marked rôle in its etiology, and the disease seems often to occur repeatedly in the same families. The future patient might be expected to be rather dull in his early youth and show difficulty in getting on with his studies. While this is not infrequently the case, still cases often occur in young persons, not only of apparently usual mental power, but of brilliant, perhaps precociously brilliant faculties. This has thrown some doubt on the hereditary basis of the disease, especially as some times no serious taint can be found in the antecedents. In this particular form of mental alienation, I think, it is, however, especially important to search for other than distinctly mental disease in the ancestors.

Wolfsohn<sup>1</sup> recently made a study of the material of the Burghölzli Asylum at Zurich with a view to the determination of the frequency of the hereditary factor. Of 2215 admissions there were 647 cases of dementia precox. About 90 per cent. of these showed hereditary taint; of four hereditary factors insanity was the most frequent (about 64 per cent.), followed by nervous diseases, alcoholism, and other forms of hereditary taint; heredity was combined in about 34 per cent. The most frequent combinations were insanity and alcoholism, and insanity and nervous disease; the distinct influence of heredity could not be proved in the cases in which the taint was alcoholism, nervous disease, and other forms; the influence of the taint has no striking effect on the character of the first symptoms; the catatonic form is the most and the paranoid the least affected by the taint of insanity.

Every individual born into the world has, if it could be determined, a definite potentiality for development. The force of the impetus which starts it on its path is sufficient to carry it a certain definite distance. The predetermined goal, in each case, will be reached if no accident intervenes to prevent. In the subject of this disease the original impetus has been weak, only sufficient to carry them a short way, and when its force is spent development stops and the retrograde process is hastened, or perhaps immediately initiated by some special physical or mental stress occurring at the critical

point of puberty and adolescent evolution. As the French have it, these patients are "stranded on the rock of puberty."

If this is a true conception of the nature of the hereditary factor in these cases it is readily seen that it becomes important to search especially for evidence of debilitating influences in early life—masturbation, excessive study—or conditions affecting the health and strength of parents at the time of impregnation or during pregnancy—alcoholism, tuberculosis, extreme age, neurasthenia.

Aside from this class of causes, direct heredity is frequently in evidence, and we frequently find families with several cases of dementia precox in them, just as we find similar conditions in manic-depressive psychosis.

Of exciting causes it would seem that we frequently find severe shocks, both physical and mental, as, for example, severe hemorrhages, infections—often puerperal—fright, and that train of emotional disturbances following seduction and desertion.

Particular stress has recently been laid upon the mental factors in the etiology and they should always be sought for.

Recently a great deal has been said about a possible toxic factor as being responsible for the disease, and this toxic factor has been supposed to have its origin in some of the glands after the analogy of the toxin in thyroidism—probably some internal secretion of the testicles or ovaries, as the disease is so closely associated with the changes incident to puberty. Then, again, the changes of metabolism in this disease are quite pronounced and are thought to find their explanation in a toxemia.

The latest tendency is to give greater prominence to the mental factors as having etiological importance. Jung<sup>2</sup> by his analyses has especially called attention to the buried complexes with resulting symptoms, while Meyer<sup>3</sup> considers the condition more from a biological standpoint as being the result of continued inability to adjust with the development of unhealthy biological reactions. Recent studies would indicate that these difficulties arise in people of peculiar character make-up—more particularly in those who have what is termed a "shut-in" character. These persons do not meet difficulties openly and frankly, they are inclined to be seclusive, not to make friends, to have no one to whom they are close and with whom they can talk over things. They do not come into natural and free

relations with the realities, are apt to be prudes, over-scrupulous, and exhibit a sentimental religiosity. Sexual difficulties are frequently connected with the breakdown.

*SYMPTOMATOLOGY. Mental.*—In considering the mental symptoms of dementia precox Stransky<sup>4</sup> very happily calls attention to the very different impression this disorder makes on one than do such conditions as mania, melancholia, paranoia and amentia (confusion). These latter disorders seem to us to be due to the deviation of normal mental processes either to the positive or negative side; we can put ourselves, as it were, in the position of the patient, can feel his feelings in miniature. The differences are merely differences of degree, of more or less. With dementia precox, however, the effect is quite different. The awkward, constrained attitude of these patients makes us feel quite out of touch with them, they seem unnatural, their acts "unpsychological," to coin an expression.

This fundamental difference in the impression created in us by the dementia precox patient from that produced by other types of mental disorder Stransky traces to what he believes to be the basic factor in the symptomatology—*intrapsychic ataxia*. By this term he means a disturbance of coordination between the intellectual attributes of the whole psyche and the affective attributes, or as he calls them respectively the *noopsyche* and the *thymopsyche*. Intrapsychic ataxia might then be called more specifically a *noo-thymopsyche ataxia*.

The recognition of this ataxia, the separation of intellectual and emotional reactions, is what has led some to prefer the name schizophrenia to dementia precox.

This intrapsychic disturbance of coordination leads to a defect, the signs of which are much more marked in the emotional sphere than in the intellectual sphere.

Inasmuch as this disturbance of coordination is the most important expression of dementia precox, according to Stransky, it will be worth while to go somewhat into the details of his description of it.

The coordination disturbance may manifest itself in different ways and in different degrees. The simplest way is by a lack of harmony between the expression of the affect and the idea content of thought. For example, the patient cries when he should be glad,

or vice versa, though much commoner than this contrasted reaction is an affective reaction which is inadequate—the patient merely sim-pers or smiles when the facts would warrant sadness or hearty laughter. We come across anger from wholly indifferent causes; fear, timidity, shyness appear without any apparent reason; familiarity, obtrusiveness, eroticism occur, displaced, perhaps in the same situations in which there was formerly embarrassment, shyness, coldness. Quite commonly a certain state of feeling dominates all conditions of consciousness, a certain stupidity and apathy, a surprising poverty of affect, which is in strong contrast to the clearness which the patient may demonstrate. Cold and passive, without so much as moving an eye-lash, without any spontaneous reaction, without expressing a wish, he is oriented to time and place and person, is conversant with everything going on about him, shows good school knowledge, his memory is faultless, shows up well in an examination of his intelligence, and denies feeling sick. However, he shows no longing after freedom, or feeling of sadness at his position; these all appear extinguished in him. This coldness produces an unnatural impression. One gets the impression of the dream state in epilepsy, the mental state of which has a certain symptomatic relationship with many forms of dementia precox.

The lack of conformity of the emotional reaction and the idea content is shown not only with reference to a given time but in relations of succession. Moods and affects change in all possible ways without visible inner or outside causes. Here we see the same ataxic tendency. The April-weather behavior of the affects and moods suggests the relationship with hysteria.

It is this fundamental disturbance in coordination that gives rise to the commonly described symptoms of *failure of voluntary attention* and the *lack of interest* which these patients show both in themselves and their surroundings. They care little, if at all, about what goes on about them, and although confined in an institution, express themselves as satisfied with their condition and have no desire to leave. They sit idly about, giving no heed to what goes on about them, are unable to apply themselves to any sort of work or even reading, and when questioned may even pay so little attention as not to understand what is said to them, so that the question has to be repeated.

From this lack of attention things in the environment are often not perceived at all, but when they are perceived they are understood quite fully, and we usually find these patients are *well oriented* in all respects, temporal, spacial and personal, and show no *evidences of clouding of consciousness*.

In the same way also arises the so-called *emotional deterioration* which they exhibit. It is this symptom which is largely responsible for their indifference and lack of interest already mentioned. The expressions of joy or sorrow, if they occur at all, are shallow and of short duration. A death, a birth, a marriage, the visit of a long absent relative, are all apprehended with the same lack of emotional impression. No matter how much pleasure or pain the event might be supposed to give, or would give in a normal person, the patient receives it with indifference, without surprise, without an expression of interest often, in the most matter of fact sort of way, as if such things were occurring hourly.

We find a similar condition of affairs in the intellectual domain. The ideas, the *content of thought*, show a *shallowness* indicating an intellectual enfeeblement. Aside from the fact that the fantastic, unusual, bizarre character of the delusions indicate the demented ground-work on which they are founded, the patients make little or no effort to support their false beliefs, show absolutely no insight into their condition, and make the most manifestly absurd statements often in the midst of a fairly coherent conversation without at all appreciating the incongruity. Thus, one patient was able to answer questions bearing on history quite well, but when asked for some explanation as to his belief that the electric lights were burning holes in him replied by saying, "They are pretty good people anyway." The same patient had the delusion that he had no eyes or hands. Usually when questioned about such evident absurdities no explanation is vouchsafed and the patient retires behind the reply, "I don't know." The *dilapidation of thought* becomes more and more manifest as dementia progresses, leading finally in its expression to almost complete incoherence, as shown in the following example:

"Oh, yes, indeed, that the weather and condition of such become rainy and people dying, and the worms eat the bodies up and take them from their coffins, they would not allow you to disclose the bodies, because the overflow

of saliva causes the disease by which people cannot exist. Well, I am the only King over in Ireland. I do not know where he has gone. They wanted to put me in a wash-tub and everything else. They do not know what I am, do you see? They come into a saloon, but they will not give you anything to drink. I was the bartender there. I am a stranger. People kill them, but they come to life again. They take the position of strangers when they leave their happy homes, but I do not understand how they could kill a woman outright. What right have you got to take a stranger when they are in their rightful homes? This is the post of duty where men of enlistment return to their happy homes. This is the post of duty to enter not. They must be prisoners. They do not get out of sight. Dr. Hogan is a doctor for the purpose of curing people; also Dr. Burns; where they are going I know not. Well, I tell you, Doctor, I suffered terribly this winter, also on post duty. I do not know anything at all about it, but there is an illustration there. I cannot blame the band while at school about their music. That thermometer there is to tell whether you live or die, and it becomes such a dangerous position that the enemies approaching at this post of duty, I cannot do it with the light. That man escaped. He is living at his home in Binghamton, N. Y. Where I know not. I know that his name is Irish. They will not take him to his rightful home in the condition of such by which he has no means of support by attending bar. I was kidnapped upon the ocean, and taking en route to this place I know not. Well, I was going to tell you, I am the enemy himself. These people here cannot perform an operation. They do not know what they are. Well, do you know me! I am the King of Ireland, and also of all countries in existence. I was the fellow that killed the Queen. I do not know who she was. I got the picture of him. His last name was Duffy. I cannot get in communication with him."

In this example the incoherence reaches a very high degree, the conversation becomes a mere "word salad," in which it is only possible, here and there, to pick out an association, and that only of superficial character.

The *memory* is usually defective, especially for recent events, reminding us of the memory defect of senescence. This defect, to a certain extent, is undoubtedly apparent only and dependent upon lack of perceptions because of the inability to fix the attention. An event which is not perceived will, of course, not be remembered, and similarly an event which is only perceived in a desultory manner and not fully comprehended will not be recalled at its true value. It becomes quite difficult, therefore, to differentiate the elements of this defect and tell how much is due to a disorder of memory *per se*. Undoubtedly a certain proportion of it is, though, and this defect is probably, largely at least, a defect of impressibility.

Knowledge acquired before the disease began, however, especially, therefore, as these patients are already quite young, knowledge acquired in school, is often remembered with quite remarkable accuracy. Whole tables of matter, learned by rote, can be repeated, and often this ability constitutes a striking feature of the case when the dementia has become profound, and this symptom is perhaps about the only one left to indicate that the patient was ever possessed of normal mental faculties.

Many of the symptoms of dementia precox are conditioned by the existence of submerged complexes. The complex does not cause the disease but it is responsible for the particular character of the mental symptoms.

The patients frequently complain that their thoughts leave them suddenly when they try to explain themselves and we note in these cases, often in the midst of a conversation, a sudden pause and then a difficulty in resuming the train of thought. This *thought deprivation* we have learned from association work is the result of strong emotional content—the flow of thought being inhibited by the presence of strong emotion. We see, for example, how the reaction time is lengthened when an idea is struck with strong emotional coloring. The patients often give a delusional explanation to these experiences and claim that they are robbed of their thought by their enemies.

We find also that frequently in the midst of a perfectly coherent and reasonable conversation a perfectly senseless remark will be injected. These *saltatory associations* indicate the momentary outcrop of a complex-association.

In the same way the *stereotypies*, particularly the *speech perseverations*, center about the complexes and the *neologisms* become *complex indicators*. Because of the submergence of the complexes, the patient having no comprehensive knowledge of their existence, questions addressed to eliciting an explanation of these phenomena produce no results. The patients are *inaccessible*.

In dealing with the fully developed psychosis it is useful to consider, as in dealing with the mental symptoms of general paresis and the senium, that we have a disease which is typically a dementia from beginning to end, and that upon this groundwork of dementia various psychotic symptoms may be engrafted. True, in certain

cases the early symptoms do not indicate the dementia at all well, but then this conception of the disease, as in the other two cases mentioned, I think, aids somewhat in its comprehension. All of the various mental symptoms must be considered as having this demented foundation and as being modified in their expression because of it.

The general symptoms of the disease that are common to all varieties are, as might be expected, the symptoms of mental deterioration, of decreased mental efficiency.

*Physical.*—These patients usually emaciate during the early stages of the disease, anorexia and insomnia are common, circulatory disturbances, rapid cardiac action, and cyanosis of the extremities are often seen, as is also dermatographia, the result of vasomotor paralysis. The deep reflexes are exaggerated and the pupils quite commonly widely dilated. Epileptiform, and especially hysteriform, attacks are quite frequently observed in the early stages.

In the early history many apparently unimportant symptoms may be found, such as headache, vertigo, etc. Urstein<sup>5</sup> calls particular attention to the occurrence of gastric disturbances, often periodically. This is one of the general neurastheniform symptoms one frequently finds in the anamnesis. It would seem as if these patients hardly had force enough to live, that some set of organs was always suffering, there was not enough to go round.

*MODE OF ONSET.*—The early manifestations of dementia precox often go unrecognized for a long time and are diagnosed as other conditions. We must realize that it may often be quite impossible to make a diagnosis by taking a cross section of the mental state at any time, particularly in the prodromal or initial stages. This is particularly true here as the early manifestations may be acute and transitory episodes which clear up promptly. It is only by studying the life history of the individual that we come to realize that these episodes are but the early manifestations of a chronic process, the tendency of which is toward progressive deterioration.

These early manifestations may take the form of the various types of the manic-depressive psychoses, psychasthenia, neurasthenia, hysteria, hypochondria, acute confusion and paranoid states. Certain cases also develop following a period of mild fever and are often incorrectly diagnosed as the accompaniment of some infection. It



must be remembered in this connection that dementia precox may, as a matter of fact, follow the various infections, such as typhoid fever, and that particularly in predisposed individuals the mental symptomatology in these various infections presents a picture closely resembling precox, and that considerable time is often required to clear up the diagnosis. Bonhoeffer<sup>6</sup> has recently called particular attention to this class of cases and emphasized their importance. It should also be borne in mind that many individuals of decidedly defective and erratic makeup also suffer for considerable periods from various functional disorders, particularly from nervous dyspepsia. Dreyfus<sup>7</sup> has emphasized the importance of these cases, and shows the frequency with which such conditions may be found in the antecedent history of precox cases. In all this class of cases, particularly if atypical, a search should be made for the fundamental symptoms as already described, particularly the emotional indifference and the attention disorders.

In describing the varieties of dementia precox they will be considered under five heads: (1) the *Dementia Simplex, or Heboidophrenia* of Kahlbaum; (2) *Hebephrenia*; (3) *Catatonia*; (4) *Paranoid Forms*; (5) *Mixed Forms*.

### I. SIMPLE DEMENTIA (*Heboidophrenia*)

In accordance with the conception of dementia precox outlined above, which regards it as primarily a dementia upon which various psychotic symptoms may be engrafted, this variety would constitute the typical, fundamental form of the disease, showing the development of the dementia per se, with few if any of the extraneous symptoms found in abundance in some of the other forms.

The origin of this variety is insidious, and it may be quite impossible to fix its date, largely because at first the beginning symptoms were not appreciated at their true value. The young boy, or girl, as the case may be, quite commonly was previous to the onset of symptoms, getting on nicely in school, perhaps unusually well, was quite a favorite with the other pupils, took an active interest in school life, and was going on with the young people of the neighborhood, being in every way considered a bright and normal child. The fire may have burned very brightly, but it was built of straw.

At first the patient begins to show a lack of interest in things, ceases going out and associates less and less with other children. There is a general listless, apparently lazy and tired-out attitude toward life assumed, lessons are neglected and not learned, and in school the patient shows a failing ability to assimilate new facts—to acquire knowledge.

This state of affairs is associated with insomnia and often headache, sometimes hysteriform attacks, and not infrequently is mistaken for neurasthenia, or, if the patient is quite inactive, this inactivity is taken to be an expression of the depression of melancholia.

Transitory delusions may occur, which are fully expressed, and fleeting hallucinations may at times occupy the field. These manifestations are usually disagreeable, voices are heard saying disagreeable and insulting things, visions of the devil occur and the like.

Not infrequently these patients show themselves to be quite irritable, and partly as a result, there may occur transitory excitements. If, in addition, peculiarities of conduct and strange habits develop, the desire to be alone, some mannerism, or slight evidences of muscular tension and the simpler manifestations of negativism, the close relation between these and the more frequent and more fully developed varieties is shown.

It is in this group that we find the mild and abortive forms that being arrested give one the impression that the peculiarities of the individual are inherent character anomalies. Not a few criminals, hoboes, prostitutes, pseudo-geniuses, cranks, and eccentrics if their history could be accurately traced would show an episode of distinct precox coloring which separated a period of relative efficiency in their lives from a following period of relative inefficiency.

A study of this class of cases shows quite frequently that the patient's resort to a hobo type of existence has been the result of his inability to adapt himself to the ordinarily complex conditions of social life, in other words, that he has slipped from under all responsibilities and all conditions which involved continuity of effort and industry. He goes from one position to another unable to fulfill even the simpler duties because of his lack of continuity and interest. Such cases will show the history of a mild attack, with perhaps the development of a dilapidated and incoherent delusional system which

subsides and remains dormant when the patient gets away from stress. Such patients, when they find themselves under conditions of stress that they cannot escape from, as for example, following enlistment in the military service, quite frequently break down and have to be sent to a hospital.

## II. HEBEPHRENIA

This form of dementia precox is usually of more abrupt onset than the last, although here we may also find that the prodromal period extends over several months, during which time the patient suffers from insomnia, headache, anorexia, and perhaps some loss of flesh.

The symptoms of the onset of the attack are quite generally confusion and symptoms of depression which have an outward semblance to the symptoms of melancholia. The characteristic retardation of manic-depressive psychosis is, however, absent, and hallucinations and delusions occupy a much more prominent place in the picture. These hallucinations are numerous and involve more especially the auditory and visual fields. Both hallucinations and delusions are disagreeable. Voices are heard calling vile names and accusing the patient of immoral practices; delusions are self-accusatory and in harmony with the depression, the patient thinks he is lost for having masturbated and the like. In this condition violent attempts at suicide are not infrequent and only go to add force to the diagnosis of melancholia so often made at this stage of the disease.

After the active symptoms of the first stages are passed the underlying and fundamental defect becomes more apparent. The hallucinations are fleeting, the delusions not firmly fixed but changeable and fantastic or silly in content, though often with a paranoid tinge; thus one patient believes the sheets stick to his feet, another that this is the "wandering planet." These delusions are not supported by reason of logic, and seem not to have been at all assimilated into the mentality of the patient. They are false ideas, disconnected from the general content of thought and existing much as do foreign bodies in various anatomical locations.

The following extract from a history illustrates the points made above:

Case No. 18859, male, æt. 26 years. His present illness began eight months prior to his admission, and began with religious excitement, during which time he had many delusions of a religious nature. Patient had various visual and auditory hallucinations, dependent, and following upon the reading of a religious book, "St. Anthony's Guide." His mental disturbance interfered with his duty, and he was finally sent to the Post Hospital for observation. Patient stated that he believed he was in a "death state" for eight months.

The medical certificate stated that patient was neglectful and slovenly in habits; that he had a mild attack in July, 1910; had a religious delusion that he was being persecuted for his sins. Present symptoms are manifested by the delusion of a religious nature—that he believed a miracle was necessary to cure a vague condition of his head. He imagines all kinds of persecutions of a religious nature.

He stated that he had heard voices and seen visions prior to his admission. He had various somato-psychic delusions and auto-accusatory ideas. He believed that his brain was desiccated; the bones of his skull pressed together; his ears obstructed; that his hands had turned to ashes; that his entire blood boiled, etc. Judgment and critique were impaired. He responded very well to the intelligence tests. He did the arithmetical calculations promptly, and repeated the test stories almost verbatim. On December 7, 1910, a note states that his somato-psychic delusions had almost entirely disappeared. On January 6, 1911, another note states that he has become careless about his personal appearance, shows a tendency to destroy plants on the ward, and made an attempt to escape. He was then transferred to Retreat 1. On January 8, 1911, patient attacked an attendant who was attempting to subdue another patient. The patient now explains this assault by saying that he thought the attendant was "beating the patient up" and that he has always been accustomed to taking the part of the weaker man in a fight. He now states that he thoroughly understands that the attendant was not assaulting the patient. On June 18th, patient imagined the devil was after him—in order to tear his heart out. He said the devil has always prevented him from attempting to do anything he undertook.

In this case we see the long prodromal period in the presence of hallucinations and delusions of a persecutory character, and the outbreak of impulsive attacks, which, however, later on when the patient is better and is able to explain them, are shown to have been founded upon what he at least then thought to be a reasonable basis.

The following extract from a history shows the characteristic falling off in efficiency of the individual before his breakdown. It is quite characteristic to find that these patients in their early days have had a small earning capacity. This should always be significant of a fundamental inefficiency.

Case No. 18844, male, æt. 19 years. At the age of 16 he was employed as errand boy by a telephone company for about four months. At this time his family moved to Washington and the patient obtained employment in a drawing department of a lithographing company. He remained here about two years, during which time he did not receive any increase in salary, although he says his work was entirely satisfactory. Following this he obtained a position in the post-office drawing maps for the rural delivery service. This position he held for about one year and six months, receiving from \$50 to \$110 per month, being paid by the piece. In July of this year he was laid off among a number of others, as there was not sufficient work to keep them busy. He then secured a position with the lithographing company about the first of August. He says he was unable to do any work, he got confused and could not attend to what he was doing, people were all against him, they were grinning at him, etc. He stayed here for only two weeks and then left, returning after a few days without salary. He was again tormented by those about him, and since that time he has not worked. It has since been learned that while he was absent from work those few days, he was a patient in the Washington Asylum Hospital.

During July he believed that the people on the street were against him, he thought they made remarks about him, although he says he never heard any voices, and never heard any one make any unpleasant remarks, it is impossible to elicit any idea of influence or outward control. He did not think any one attempted to harm him, and no attempts to poison or dope him have been made, but he is suspicious and apprehensive of every one. He thought people on the street were trying to interfere with him, and he was doing nothing wrong to his knowledge. For instance, the soldiers on the avenue would walk past him very rapidly, and he got the idea that they wanted to kill him.

These ideas are not of recent development, although it is only since the past summer that they have interfered with his work. Probably two years or more ago, he first noticed that people were against him. Regarding his trip to the Washington Asylum Hospital, he says that he was sent there for treatment, because he had remained up all night and had been disturbed and worried. He admits that during this night, prior to going to the Washington Asylum, he heard remarks, derogatory to his character made by passers-by. The incidents which led directly to his being admitted to this hospital are rather vaguely described by the patient, but he says he became decidedly confused and worried, and frequently did not know what he was doing. Members of his family became afraid of him, as he had been somewhat excited and erratic during the night, he frequently locked himself in his room, he was all broken down, but has never attempted any violence to others. He says the members of his family at one time thought he was crazy. He himself says that he does not think he was actually crazy, but he had a very great feeling of uneasiness and was very much worried. He did not sleep well, and had a headache for the past two years, appetite had not been disturbed. Patient's

use of alcohol has been very moderate, he has been drunk only once in his life.

Case No. 17753. The following extract from the history of an old case of precox of the hobo type shows well the looseness of the train of thought, the weakness of judgment shown by the insufficiency of the reasons given for certain conclusions, and the indifference shown by making no effort to explain or understand what would appear to be remarkable occurrences:

Two years ago he went back to the old country to see his family. On his way back to Arkansas he says President Roosevelt was on the same train with him, and that the President made him give up his seat. He knew it was Roosevelt because he looked like a man by the name of Rosenthal who owned a hardware store in Batesville, Ark. Patient states that while alone on the farm he read the Bible a great deal, as well as books about spirits; that through their perusal he learned he had become baldheaded and had rheumatism, and had strained his back. As the result of the will of Martin Luther, acting through some mortal, he said his neighbors would keep his cattle, hogs and horses from coming home at night; that the stock became poor and everything seemed to go against him. At night he was troubled by some one who punched him and kept him awake. He was not relieved of this annoyance until he put a piece of money in his shotgun. He recalls seeing two stars traveling toward each other, one from the south pole, the other from the north, and the next night there were seven stars arranged about the moon. He did not know the significance of these phenomena. About the middle of February he said he was playing cards with a friend whom he asked who was elected President. The friend told him that there was no one on the ticket. Patient came to Washington a little later (March 1, 1909) to see if he could not secure the position of President, and also to ask Roosevelt what was meant by making him give up his seat on the train two years ago. On arriving in Washington patient went to the Capitol and inquired about getting a room, told of his trouble with Roosevelt, and was immediately turned over to the police department.

The emotional deterioration is prominently in evidence. One patient says enemies are following him, and that he has been killed a number of times; another that the other patients are trying to injure him. These facts are told with no show of emotion, in a decidedly matter of fact way.

In the cases that are not profoundly demented a certain *looseness of the train of thought* is noticeable. One patient tells me that he has been ordained by the Lord to preach—that we are all put here to do the best we can—that the bread in the hospital is impure—

that he enlisted on a certain date in a certain regiment—that when he first came to the hospital he was not well in mind or body, etc. This superficially resembles flight of ideas, but there is none of the pressure of activity of manic-depressive psychosis, and while the changes in direction of the train of thought are abrupt, they are not sudden, and the degree of incoherence is much greater. The speech is deliberate and there does not appear to be any distractibility. The condition is due rather to *loose connection* between the elements in the train of thought and to *poverty of ideas*. In some of the more excited phases of dementia precox we do find a close resemblance to flight of ideas and these patients are often difficult to differentiate from manic-depressive psychosis.

These patients, like the cases of heboidophrenia, often exhibit peculiar habits and mannerisms—a tendency to repeat certain phrases, suggestibility, unusual attitudes, or a certain muscular tension, shown by angularity, clumsiness, and restraint in their movements. Among these symptoms is often noted a silly laugh which is frequently developed while the patient is talking to himself, but which may occur at any time with absolutely no apparent cause. If the patient is asked for an explanation of why he laughed he will reply in a characteristic manner, “I don’t know,” or else give some shallow, wholly inadequate, or manifestly false reason. These various symptoms, with the exception perhaps of the silly laugh, all go to show the fundamental alliance between this form of dementia precox and the catatonic variety next to be described.

In conduct these patients usually exhibit a condition of listlessness, apathy and disinterestedness with little tendency to activity or to emotional expression. Alternating conditions of depression and excitement may and often do occur and occasionally the disease is ushered in by an excitement which may lead to a diagnosis of mania, as the opposite onset we have seen may lead to a diagnosis of melancholia.

The alternating conditions may be very mild, as in the case of the young soldier mentioned above, who thought he was ordained to preach and that the bread was impure, who will be quiet for several months and then exhibit the opposite condition for a few days by following the doctors and nurses about the ward telling them his troubles. On the contrary, the alternations may be between con-

ditions much more extreme, as in the case of the patient who alternates between a state of stupor and a state of excitement, in which he eats paper, strings, sticks, and bedecks himself with all sorts of trash he collects for that purpose, at times becoming violently angry and cursing every one. This more marked alternation is, however, somewhat more characteristic of catatonia.

In these excited conditions in cases in which dementia is well marked the form of thought becomes greatly deranged, and there is a high grade of incoherence amounting to *confusion* of thought and the speech shows absolute incoherence, a mere jumble of words expressing only fragments of ideas. A veritable word-salad (*salade de mots* of Forel), often with *neologisms*.

The following is a stenogram from such a case. Note the neologism *prestigitis*:

"How old are you?" "Why, I am centuries old, sir." "How long have you been here?" "I have been now on this property on and off for a long time. I cannot say the exact time, because we are absorbed by the air at night, and they bring back people. They kill up everything; they can make you lie; they can talk through your throat." "Who is this?" "Why, the air?" "What is the name of this place?" "This place is called a star." "Who is the doctor in charge of your ward?" "A body just like yours, sir. They can make you black and white. I say good morning, but he just comes through there. At first it was a colony. They said it was heaven. These buildings are not solid at the time, and I am positive this is the same place. They have others just like it. People die and all the microbes talk over there, and *prestigitis* you know is sending you from here to another world." "Do you know what year this is?" "Why, centuries ago." "Do you know who discovered America?" "Yes, sir; Columbus." "What year?" "1492; they have had several discoveries since then, sir." "When was the Civil War?" "That was in 1864-1860-1864." "Who was the President of the United States at that time?" "Well, let me see; they make you over again, sir." "When did you enter the army?" "I entered the army, why it was centuries and centuries ago; not I but a body just like my remembrance around 1903." "Were you ever in Cuba?" "Yes, sir; I was there three times. That was centuries ago; not I but my remembrance, because I have been killed; yes, I have been killed, I am positive of that. Over there originally—originally means first—they re-make us. There are other stars like this. I was sent by the government to the United States to Washington to some star, and they had a pretty nice country there. Now you have a body like a young man who says he is the *prestigitis*." "Who was this *prestigitis*?" "Why, you are yourself. You can be a *prestigitis*. They make you say bad things; they can read you; they bring back negroes from the dead."



## III. CATATONIA

Like the other forms of dementia precox which have been described, this form is usually of subacute or chronic onset, being preceded by symptoms of insomnia, confusion, headache, loss of appetite, emaciation and the like. The type, on the contrary, is sometimes of sudden onset, in which case it is apt to be the result of a suddenly depleting cause like the loss of blood or some severe emotional shock or fright. In these cases the patient may become at once profoundly stuporous.

The initial stages are usually marked by a mild grade of depression, as in other forms, giving the appearance of melancholia. Hysterical attacks and in some cases epileptiform convulsions may occur during this period.

Following the more or less vague symptoms of the prodromal period occur the typical symptoms of the disease which group themselves into two stages which irregularly alternate, viz., *catatonic stupor and catatonic excitement*.

In catatonic stupor the principal symptoms are *stupor, negativism and muscular tension*. In the extreme cases the patient lies perfectly still, without making any movement whatever and not reacting at all to stimuli. Questions are paid no attention to whatever, absolute *mutism* being the rule, while sensory stimuli of very considerable strength may be applied without eliciting any response.

The mutism is one of the manifestations of *negativism* which usually shows itself in various ways. The patient not only refuses to eat, but pays no attention to the calls of nature, permitting the bladder and rectum to become overloaded with urine and fecal matter, often to a serious extent; he likewise allows the saliva to collect in his mouth for hours at a time until putrefactive changes have occurred, and then only perhaps as a result of insistence by the nurse belches forth this mass of stinking fluid. Any effort to get the patient to do anything is immediately met by a response diametrically opposed to the desired act. If asked to show the tongue the lips are tightly closed; if asked to open the eyes they are closed, if already open, or, if closed, the lids are pressed more tightly together by the orbicularis.

Attempts to move the body are met by marked resistance and

elicit the condition of *muscular tension*. The limbs are quite rigid, often stretched out stiffly, the fist perhaps tightly clenched, or again, the extremities of the body as a whole, perhaps, may rigidly occupy some peculiar position. This muscular tension is often shown in *grimaces*, certain facial muscles continuing in contraction and giving strange and peculiar expressions to the countenance. Thus we find that the patient maintains a constant expression of scowling, or keeps the eyes tightly closed, the cheeks puffed out, or perhaps the lips closed and protruded, producing the condition called by the Germans "Schnautzkrampf."

Quite the reverse of this picture of negativism and muscular tension is seen in other cases. In the place of muscular tension we find a condition of remarkable flexibility, so that the limbs may be molded into any position desired, and though quite unusual, they are maintained there indefinitely—*catalepsy*—if raised, until gravity and fatigue cause them to fall. This condition is known as *flexibilitas cerea* (waxy flexibility).

With this condition is also found the opposite state of negativism, namely, *suggestibility* or *command automatism*. Patients in this condition do mechanically just what they are told. This condition of heightened suggestibility may be so marked as to produce *echolalia*—a repetition of words and phrases spoken to them, and *echopraxia*—a repetition of movements made in their presence. These symptoms are often noted during the examination, when it is observed that the questions of the examiner are repeated by the patient—in whole or in part—and that many of his movements may also be repeated, such, for example, as looking at his watch, putting the hand to the face, and the like.

The condition of catatonic stupor alternates with *catatonic excitement*. Here we find symptoms manifesting themselves by activity as opposed to the general condition of passivity or quiescence in the stuporous patients.

The marked cases of catatonic excitement are constantly talking, shouting, throwing themselves about on the bed, and generally manifesting a condition of increased psychomotor activity, reminding one very much at first of the manic stage of manic-depressive psychosis. The actions are, however, much more absurd, not directed consistently to any end, quite incoherent and often interrupted

by attitudinizing, hysteriform attacks and stereotyped movements—the patients repeating over and over again certain motions, such as swaying the body backwards and forwards, nodding the head, swinging the arms or certain other motions characteristic of the patient and which have no apparent significance. These motions are often accompanied by some sound, such as a grunt or blowing sound, or by the continuous repetition of some phrase.

*Verbigeration*, often associated with senseless rhyming, is quite common. The following is an example:

"What is your name?" "How old are you?" "About thirty." "How long have you been here?" "A couple of years." "What do you do most of the time?" "Fold shirts in the laundry and mend the clothes." "Do you talk to yourself?" "I do not talk to myself; talk to other people, also talk to all the people I run across." "What do you talk about?" "Talk about the weather, etc." "What is that you say to yourself?" "Locks and keys, keys and locks, locks, keys, keys, locks, locks, locks, keys; just a sort of doggerel (perseveration). You know some of the attendants might get hold of me and punch me. Locks, keys, keys, locks, locks, keys, keys, locks. You know if they was to run across me making too much noise they might hurt me." "What do you say locks and keys for?" "Just to enjoy myself. You know there are times when there is nothing doing, and I have to do it to pass away the time, and you might just as well say something as nothing." "What did you say the other night to the students?" "Told them about locks and keys." "What else?" "Myriads of us keep growing in numbers, also in largenesses; locks and keys, keys, locks, locks, keys, keys, locks, locks, keys, keys, locks. Myriads of us quick-foot full through, ev-er no mat-ter. Locks, keys, keys, locks, locks, keys, keys. Myriads of us ev-er full us as keep lives giant's growths, ev-er lives giant's keeper, ev-er no mat-ter. Locks, keys, keys, locks, locks, keys, keys, locks. Lives giant's wealth, health and pleasures, ev-er no mat-ter. Lives sweet foreigners, ev-er no mat-ter." "Can't you recite some more poetry?" "I cannot give any more; locks, keys, keys, locks, locks, keys, locks. Me don't know any more; locks, keys, keys, locks, locks, keys. I will get in trouble. I have been raking away at it outside and in and inside out again. I have tried to write poetry, but could not write any more than six fools."

The noisy incoherent talk of these cases might readily be thought to indicate flight of ideas, but the incoherence is much greater than that found with an equal grade of agitation in manic-depressive psychosis, and there is no trace of a guiding thought in the form of a goal idea. The patient, too, does not show distractibility to the same extent, being on the contrary, quite inacces-

sible, paying no attention whatever to what is being said or done by others, not even making any pretense to answer questions, though often repeated.

This illustration shows well the *perseveration* in the field of speech. A single motor impulse gets the field and holds it; the same word or phrase is repeated over and over again. A quite similar disturbance is seen in the various types of *stereotypy*. In the field of speech this manifests itself by a tendency to the use of set, unchangeable sentences. One of my patients whom I met every evening on leaving my office used invariably to say: "Doctor, I wish you would go to the city with me this evening, have the electricity shut off, and those parties arrested." This sentence for months was never varied by a word or intonation and was elicited every time I came within speaking distance. Later the last phrase was left off and then the abbreviated form was continued as the other had been. There seems to be a sort of coagulation of the motor reactions; they are not fluid. The same thing occurs in other motor fields.

Quite characteristic of this condition, too, are the *impulsive acts* of these patients. They will suddenly and with absolutely no warning whatever commit some act of violence, such as assaulting another patient or breaking out a window, and quite as suddenly lapse into their previous state. It is quite impossible to get any adequate information as to the cause for these acts. The patient is inaccessible to a degree and either gives some senseless reply to the questions asked, a puerile reason, perhaps, or retires behind an "I don't know" or complete silence. These attacks come out of the clear sky, cannot be foreseen, and make these patients at times very dangerous.

In the milder cases of catatonic excitement, in which the motor excitement is not so pronounced, the patients are quite commonly characterized by the development of certain habits of action in some definite particular. These peculiarities are known as *mannerisms*. One patient must slide the right foot backward and forward before beginning to walk, another holds the fork in a peculiar way, another walks close to the wall, not coming out into the center of the ward, another carefully avoids stepping on cracks in the sidewalk, and so on indefinitely.

The following extract from a case record shows the development of many characteristic catatonic symptoms:

Case No. 18775, male, æt. 19 years. Patient states that he has been an inveterate smoker of cigarettes, a package of ten cigarettes sometimes lasting him only about an hour. He was sick six weeks with typhoid fever when 12 or 14 years old; had worms as a child, claims to have begun the excessive use of alcoholic liquors when 14 years old, and has been frequently drunk. He has had a common school education, and says he got on well. Prior to his entry in the Navy he had several positions as cash boy in a dry goods store and as bell boy in a hotel—was once discharged on account of drunkenness. He enlisted in the Navy as apprentice seaman May 12, 1910, because he was unable to get along with his employer.

Sometime in the early part of September, 1910, after he had been on an alcoholic spree, he returned to the ship and thought he heard his shipmates making remarks about him and saying they were going to throw him overboard. He left the ship and went to the police station at Newport and asked the police to lock him up; the next morning the master-at-arms came after him and he was locked in the brig of the ship. He still had auditory hallucinations and thought he could hear his mother and little brother talking to him; was kept several days in the Naval Hospital at Newport under observation. He slept little, and felt very nervous. Was admitted to this hospital September 30, 1910. Upon arrival here, he wanted to see a priest—said he was going to die, that he heard people saying they were going to shoot him, said he felt awful scared, and everybody seemed to think he was a spy here.

In October, 1910, visual and auditory hallucinations were the most prominent feature of his case. Voices told him to get out of bed and remain out. For a time he did not eat, saying something prevented his swallowing; again he could not breathe; something closed his nose; his bowels were obstructed and urine was retained; saliva was allowed to accumulate in his mouth. While in bed, he assumed a constrained position; his head was held from the pillow without effort; his facial expression was one of dazed confusion. He was disoriented for time, place and person, said he was not insane, but knew that every one around him thought him so. He had a marked condition of *flexibilitas cerea*. When in bed, his head was frequently raised in turtle-fashion without the support of a pillow. About February 1, 1911, patient began to improve progressively. At that time he was up and dressed and about the ward, talked more freely concerning his past experiences, associated quite freely with the other patients, asked for the privilege of doing some work, and rendered quite efficient service in the ward work. His insight at that time was incomplete and imperfect.

*PHYSICAL SYMPTOMS*—The physical symptoms of catatonia are much more prominent than in any other form of dementia precox.

Slight differences in the size of the pupils is common. Pupil-

lary unrest (hippus) is sometimes observed; quite frequently a marked degree of mydriasis is present, while the phenomenon of Pilz is sometimes found. The tendon reflexes are usually exaggerated. The cutaneous sensibility is lowered. Vasomotor disturbances are often seen, giving rise to cold, cyanosed extremities in the stuporous cases. With this condition may be associated dermographia. The secretions are disturbed, the sweat and saliva may be increased, the urine scanty or increased, and constipation may prevail. Loss of weight is common in the active stages of this disease.

#### IV. PARANOID FORMS

There has been a great deal of discussion as to just what cases are properly included under this heading. It is inevitable, as long as paranoia itself is so poorly defined, that the paranoid forms of mental disease should also be difficult to classify.

The fundamental fact is that we find here, in dementia precox, cases presenting the paranoid syndrome—delusions of persecution or grandeur, somewhat systematized, with perhaps hallucinations of hearing.

The difficulty is that some writers object to the inclusion of certain forms in the category of dementia precox, others question the propriety of the inclusion of the same forms under the head of paranoia. Many authors, for example, definitely include Magnan's *délire chronique* as a form of paranoid dementia precox.

If dementia precox is to be considered as fundamentally a deterioration psychosis, then we must expect to find symptoms of dementia associated with the paranoid syndrome. Kraepelin, however, has included cases that develop late in life, after thirty, and maintain their intellectual integrity for years before marked signs of dementia appear.

The difficulty of differentiating the conditions in their early stages is often very great, if not quite impossible. Now that we no longer consider paranoia a purely intellectual disorder we know that its early stages are usually marked by emotional depression. We find this same condition of emotional depression in the prodromal period of dementia precox. If, then, we find a boy eighteen or twenty years old with a fairly well organized delusional system and

somewhat depressed, with little evidence of intellectual impairment, perhaps only a desire to seclude himself, with an apparent inability to apply his mind consistently to any end, it is difficult to say whether we are dealing with a case of incipient paranoïa or of dementia precox.

When, however, we find a case which gives a history of a comparatively acute onset, with the usual symptoms of insomnia, depression, loss of appetite and some emaciation; and an examination reveals a loosely organized delusional system, the delusions of which are numerous, fantastic and often changeable, associated with numerous fleeting hallucinations, we may feel confident that we are dealing with a case of dementia precox. This diagnosis is especially warranted if in addition to the above symptoms evidences of muscular tension, stereotypy, verbigeration, automatism, mannerisms, suggestibility or negativism are found, these symptoms, as we have seen, being found in all the varieties of dementia precox in varying degrees and combinations, and seeming to show, as does dementia, the underlying unity of the several different forms.

The following extract from a case record shows a characteristic type of delusional formation in a paranoid type:

Case No. 18460, male, æt 32 years. On admission to this hospital the patient was well oriented in all spheres, showed no clouding of consciousness, was neat in appearance and tidy in habits, took a normal interest in his surroundings, assisted with the ward work, and adapted himself readily to his new environment. He showed no disturbance emotionally as a rule, but when the subject of his sojourn here was broached, he worked himself up into a slight passion. He gave evidence of being slightly suspicious, and on one or two occasions exhibited delusions of reference. "He elaborated a fairly well organized system of persecutory delusions in which many people were involved, among these, some high officials in the Army and Navy, and this delusional system took its inception in the latter part of 1908 while the patient was a member of the Seamen's Gunners' Club at Washington, D. C. He claims that the first trouble started through the instigation of certain false accusations by fellow Masons, that the men at the class tried in every way to make life miserable for him, that he had heard them call him various unmentionable names, with a view of blemishing his character. On one occasion they administered to him an overdose of iron, quinine and strychnin, on another, they tried to poison his food. They refused to eat with him at the same table, had detectives watch him, etc. He says back of all this, stood some high officials of the Navy and Army, that he saw one of these give the sign to the other man to torture the patient, that the reason these officials had them

persecuting him was the fact of the patient's invention of some dirigible aero torpedoes with proper detonators, and these officials stole the patent from the patient and then sold it to the combination of three European countries; and it was to their interest to get rid of the patient in some way in order that he should not expose them, as he had knowledge of this treasonable transaction."

The following extract from a case record shows also the delusional formation of a paranoid type, and being recorded in the shape of question and answer gives the characteristic productiveness of this particular patient.

Case No. 18211, male, æt. 25 years. "How long have you been here?" "About one year." "What date were you admitted?" "October 16, 1909." (November 10, 1909.) "From where?" "Elizabethan, Tenn." "Were you in the Army or Navy?" "Neither." "Have you ever been in the service?" "I have been in the Government service since 1904." "In what department?" "The executive department." "What is your official position?" "Governor of Tennessee." "When elected?" "In October, let me see, I took my oath of office in January, 1904, I was elected in September, 1904." "How long have you been in this office?" "For two years, I ran against G. N. Tillman and held it for two years. Then I was appointed by the United States Senate to succeed D. B. Hill." "When was this?" "May 4, 1906." "To what office were you appointed?" "United States Senator for Tennessee." "How long in this office?" "For two years. I asked for nomination of the democratic platform in 1908 and was given it." "You were elected?" "Yes, in 1908, over Theodore Roosevelt, by one million, three hundred thousand votes. My mother told me I would be President when I was seven years old, that I would have attacks and get over them, I would be nearly assassinated. I was choked in B-3, and also tried to put myself out with gas. If I could only get to my native land, France, I would be all right. I have talked my head off with the doctors in this institution to get before the public and I am worse off, the people talk in my head and I cannot get any rest or peace at all." "How old were you when you went to school?" "Six years." "How long did you continue?" "Until I was sixteen." "Did you get along well?" "Yes." "Did you like work?" "Yes." "Were you a good student?" "Yes, I began to do oratorical work at sixteen. I was the greatest orator in the world, I think I would call this waking up from the dead." "What did you do when you left school?" "Do you mean in the lighted portion or in the darkened portion?" "Well the dark portion?" "At the present time, I am hypnotised and when I come out I will be the enlightened L., T., the man of honor." "What else happened to you in the dark state?" "In the dark state, I was hypnotized at the age of four years, an infant, and they didn't bother me much till twelve years of age, the masturbation age, I began then and have kept it up ever since. The people of 1884, who was Congressman from New York—they have my mind they throb in my head—a little click that bothers me—a nervous strain they control, too, they have had me afflicted and my life, they



make me pound and scratch my face." The patient goes on to tell that by the people in 1884, he means certain ones residing in New Jersey who have attempted to hypnotize him and prevent his political supremacy. They have even gone so far as to appoint President Taft as his successor, and he is a usurper in his (the patient's) official position. The patient was told to ask why it is that these people could not give him information now, and he carried on with them the following conversation: "Why is it, '84, that you can't speak to me now? He says they would be glad to speak to me when I had become old and gray. Again, 1884, why do you bother me in this way?" (Awaiting the supposed reply, the patient assumes an attitude of intense attention) "We would not speak to you in that condition, because we want others to illustrate you." The people could all be hypnotized and go right on thinking I was insane, it is awful, and in that way I can't see if they want to cheat me out of the presidency. I read the paper and see Taft is President and I know he is not President. In other words, I am just buried alive."

"Mr. T., what other voices do you hear?" "A lady on Park Road has been talking to me for the past six months, I've been trying to get rid of it." "When did you first hear this voice?" "She has been talking to me since May 25, 1884." "How long?" "Since 1884, she hypnotized me, it was 25th of May, they are back of it." "Who is this lady?" "Miss Nellie C., Park Road." "What is her address?" "I don't know." "Ask her?" "Miss Nellie C., what is your address?" (The answer) 123456—She won't tell me, she did in the other ward." "Is she your friend?" "In the lighted L. T. I was well acquainted with her, she is talking all the time, I have been praying to Jesus Christ and I have never got him." "Why does she do this?" "The people of 1884 hypnotized me and make her." "Have you ever been intoxicated?" "I did drink in the Army, and I was intoxicated often, but this was in the dark portion. In the lighted portion I have not been a drinking man, I was a Christian, a politician and a gentleman. I was the inventor of the aeroplane and the greatest man in the world as lighted L. T. I will rule the world." "Why were you sent here?" "I don't know, I was forced into it by two unknown men, I don't know, I was hypnotized and I missed my wife and got running with other women and that got me here. I was not excited or depressed, I did not act at all peculiar, when they brought me here, they said they were going to take me home." "How are you feeling now?" "I am lying here in a half stupor, I cannot realize things." "Is your mind all right?" "Yes, sound, yes sir. There is no reason for keeping me here whatsoever, I am boarding and moving all the time, the people are holding me in captivity, the people of 1884, they are breaking down."

Patient says he has never heard the voice of God, although he has seen him while in his hypnotic state and he adds, "He is my future person, I will be God in time, when I die I will descend to birth in this life if I am allowed to live, I will reach 112 years, I will first be king of France, I am the breath of General Lafayette, I think they will just take me out of here in a casket and I will awake in my native town of Elizabethan as General Lafayette. I

think they will let me improve before they improve, before they won't take me out of here in this stupor, I don't think. It is certainly a tangled up affair."

In some of these paranoid forms the hallucinations play a very prominent part; in others they have less significance. The delusions are not infrequently of a grandiose nature and such patients often decorate themselves very lavishly with all sorts of ornaments and insignia, usually made by themselves. They are the cases that are known as fantastic paranoiacs.

#### V. MIXED STATES

As previously mentioned the several forms described are not always clean-cut. The simple, hebephrenic and paranoid often present symptoms that are more characteristically developed in the catatonic. These mixed forms are in reality very common indeed, and in fact almost constitute the rule.

*COURSE AND PROGRESS*—The simple and paranoid forms are the slowest of evolution and almost chronic in course, the paranoid forms often remaining in statu quo for two or three years. The hebephrenic and catatonic forms are more acute in onset and course, leading more rapidly to dementia in the majority of cases, although the catatonic form has rather the better prognosis.

Remissions occur especially in the catatonics. According to Kraepelin, 8 per cent. of the hebephrenics (including the group of simple dementia) and 13 per cent. of catatonics make practical recoveries, but some of these cases relapse. The paranoid cases do not get well. The tendency of all forms is to a gradually deepening dementia.

Recently Zablocka<sup>8</sup> in a study of 515 cases found that 60 per cent. proceeded to light, 18 per cent. to medium, and 22 per cent. to severe dementia. The cases which develop in persons with the "shut in" type of character show the worst outcome.

Kölpin<sup>9</sup> in a recent study of 100 cases tabulates his results as follows:

CASES	EARLIEST BEGINNING	LATEST BEGINNING
31 Hebephrenia	14	38
30 Catatonia	17	48
39 Paranoid	16	51

and comes to the additional conclusions regarding the above forms of the disease. The hebephrenic form results in simple dementia in a few cases. There are only rarely remissions and the course is generally continuous, with increasing dementia. Only the severe grades get into the asylum. The origin is more insidious in women than in men. In the catatonic form the origin is acute or subacute. A half of the cases begin with depression, a quarter begin with excitement. There are more often remissions in this form than in hebephrenia. The beginning of the paranoid form is more or less chronic. In four of the cases studied the origin was acute or subacute. The results in this form are:

(a) Systematization of delusions with many hallucinations. These hallucinations may be wonderful, etc. (fantastic paranoia). These cases are not numerous and do not present much defect.

(b) The commonest form, the building of a poor system of delusions, which earlier or later comes to a standstill. There is depression and irritability and not much defect.

(c) The delusions are loosely organized, disappear and become confused or in great numbers and are fantastic. There is no increasing dementia, irritability decreases and the patient becomes comfortable, stupid, confused, the productive with word salad.

The question whether a cure in the sense of a *restitutio ad integrum* ever takes place is still a mooted one, some observers claiming that every case of remission will show defect if examined with sufficient care. Mlle. Pascal<sup>10</sup> speaks of abortive cases beginning with pseudo-neurasthenia. These abortive cases and the cases of remission in the early stages show defects only of mild degree and largely in the higher faculties. Many of these cases go to swell the ranks of the criminals, the prostitutes, and the hoboës, and are often mistaken for cases of feeble-mindedness. Wilmanns<sup>11</sup> in a study of 127 vagabonds found 66 cases of dementia precox.

*DIAGNOSIS*—The diagnosis of dementia precox while comparatively easy in the well defined and advanced cases, becomes a matter of great difficulty in certain instances.

Certain forms of manic-depressive psychosis present characteristic difficulties, particularly the mixed forms. Here it is often necessary to find a history of repeated attacks without deterioration in order to feel sure that it is not dementia precox. The depression

which so frequently occurs as an early symptom in precox, may readily be mistaken for the depression of the manic-depressive psychosis, the retardation of this psychosis being very similar in its outward manifestations to the negativism, the antagonism the inaccessibility and particularly the lack of interest of the precox patient. If there are delusions, however, the manic-depressive is more apt to have delusions of a self-accusatory type, while the precox type is more likely to have delusions of a grotesque character, and to refer the origin of his delusions to causes outside of himself. The pressure of activity of the manic-depressive has outward similarities to the excitement of the catatonic. In the former, however, the activity although rapidly changing in its object, characteristically is addressed to some particular purpose, while with the catatonic the activity is more diffuse and has less direction. It is incoherent.

In the early stages the mild depression of the precox may simulate that of the neurasthenic, or the agitated depression may simulate that of the anxiety neurosis. In both instances the precox is more apt to show grotesque delusions and conduct disorders of a bizarre nature such as tearing up his clothes, mutilating himself, or, on the other hand, characteristic negativistic symptoms such as retaining the saliva or the urine, withdrawing from all efforts to do for him, refusing to cooperate in changing his clothing, the refusal of food and the like.

The epileptiform and hysteriform episodes may lead to a diagnosis of epilepsy or hysteria. It must not be forgotten, however, that it is possible to have precox complicated with epilepsy, and that many of the symptoms of precox, if taken in their cross section without a study of the life history of the individual, are distinctly hysterical in character.

From the infection and exhaustion psychoses the differentiation is characteristically extremely difficult at the height of the attack, and it is necessary in such patients who are suffering from a distinct type of infection such as typhoid, and who present distinctly precox symptoms, to wait until the subsidence of the infection to see whether the case clears up, as it will if it is merely an infection psychosis. Great care should be exercised in offering a prognosis in these cases. Many of the so-called cases of puerperal insanity are really cases of precox which have been precipitated by

the circumstances of the puerperal period, loss of blood, prolonged labor, infection, or the mental stress incident to an illegitimate pregnancy.

From paresis the differentiation can usually be made definitely by the Wassermann reaction of the blood serum and the cerebrospinal fluid, for both of which it will be positive in paresis, and by an examination of the cell content of the cerebrospinal fluid which will show an increased cell content and quite characteristically the presence of one or more plasma cells in the field.

From the toxic psychoses, particularly from alcoholic deterioration, the differentiation is often quite difficult. It must be borne in mind in this connection that the relatively normal man deteriorates very slowly from the use of alcohol, while we find in the records of precox cases, who have indulged in alcohol, that the deterioration has come on relatively much earlier. In addition to this, it will be found that the amount of deterioration in the precox case is very much greater than could reasonably be explained by the alcoholic indulgences of the patient. When we find these discrepancies in the history we are justified in suspecting that we are dealing with a fundamentally more serious condition than mere alcoholism. Graeter<sup>12</sup> in a valuable monograph has recently called attention to this combination of alcohol and precox, and it is extremely important to bear in mind particularly from the point of view of prognosis.

Oftentimes the question of diagnosis will arise as between an acquired defect due to precox and some form of inherent defectiveness. It must be remembered in this connection that precox may develop upon a defective basis, and that in such case the history will characteristically show the symptoms of this defectiveness, such as poor progress in school, and inability to learn in the various occupations in which the patient has been engaged. The symptomatology itself may also indicate this original defect, as for example the following production of such a patient shows quite clearly the lack of knowledge which comes from lack of education at least, and would lead to the suspicion of an inherent defect.

there is signety to vocle word i have the sin i am not edicat every body wall love this sin it will be easy to lorn for you but burden for me i am A labor willen to wark i can do beter if my sine is excaped it wall be grate and wondful for the they will love it to it was A puzle to be but not to them Silas Johnson of United States Amicar dont think I am crazy i dont know whethe cristfer clumers was or not.

***PATHOLOGY***—There is very little that is distinctive in the pathology of dementia precox. In the same way that the clinical symptoms are widely diffused and rather indefinite so it is with the pathological findings. A certain amount of degenerative change is often found in the cortical cells, while some observers hold that these cells are fewer in number than normal. The neuroglia is quite frequently found increased in amount. In the other organs the changes are inconsiderable. Beginning degenerative changes may be found in the vessels and tuberculosis is not an infrequent complication.

More recently, however, the way seems to be opening up for something more definite in the pathology of this disorder. Alzheimer<sup>13</sup> has been working on the degeneration products of the nervous tissues and thinks he has found distinctive changes and enough to write down dementia precox as an organic brain disease. Southard<sup>14</sup> has recently described certain anomalies as scleroses which he has found in precox brains. These anomalies tend to group themselves in certain regions. The frontal region is often involved and it is interesting to note that he finds a cerebellar group of cases corresponding to those presenting catatonic symptoms. His groups roughly correspond to the groups clinically showing most prominently intellectual disorder (paranoia), and motor disorder (catatonic), while the emotional disorders of precox, most prominently seen perhaps in the hebephrenic variety, have been supposed to be due to lesions in certain deep layers of the cortex<sup>15</sup> which have no direct motor or sensory or perhaps associational relations.

***NATURE OF DEMENTIA PRECOX***—From the discussion of dementia precox up to this point it will be seen that it has certain similarities to the organic brain diseases like paresis on the one hand, and to the more purely functional disorders such as hysteria on the other hand. It would seem to stand midway between the so-called organic and functional psychoses.

It is allied to paresis, for example, on the anatomical side by its pathology—the degenerations—and on its clinical side by the underlying progressive dementia upon which as a basis all manner of psychotic symptoms may be erected.

It is allied to hysteria by its frequent apparent psychogenic origin and by the similarity of the psychic mechanisms—

the "complex" formation and the symptoms to which it gives rise.

Kraepelin, taking the more material view, puts forward the hypothesis of toxic origin—from perhaps the sexual glands, since it appears so closely associated with adolescence. Jung<sup>16</sup> sees more the functional origin and would bring in the toxemia to account for the non-recovery. The symptoms, like hysteria, are fixed, as it were, like the photographic plate by the hypo bath. He<sup>17</sup> thinks the affect which causes the complex may set loose a toxin. The affect-toned complex may cause the mental and physical symptoms of a dementia precox in the same way that an infection, such as pneumonia, may follow a physical trauma.

*TREATMENT*—The treatment must be entirely symptomatic. A careful search should be made in each case for functional abnormalities and for the origin of mental conflicts and correction applied as far as possible.

These cases will, of necessity, have to spend most of their lives in a hospital. It is therefore desirable to educate them as early as possible in good habits. They should be encouraged in some form of occupation, preferably out of doors. Under the influence of hospital surroundings and farm life these cases may get on very comfortably and the dementing process be considerably retarded.

It seems probable that one of the best methods of approach to the treatment of these cases would be by the method of reeducation through the agency of industrial training. If this is to be done intelligently, however, it is essential that the patient be not merely put to work in a haphazard way, but that a sufficiently careful analysis of the psychology of his particular condition be made so that it will appear what is the best method of approach to arouse his interests and fix his attention. It is also necessary to bear in mind the motor disturbances, more especially of the catatonic group, because here the education will have to be addressed more or less to restoring certain motor adjustments. The same principles are involved in treatment of this sort as have been long recognized in dealing with the mentally defective. The avenue of approach to the individual must first be worked out, before it can be expected that material results will be obtained. In the few cases that have been

worked upon in this hospital along these lines the improvement has been prompt, marked, and considerable. Such improvement is of course open to the criticism that it might have taken place any way in the natural course of the disease, and requires further and more elaborate studies to define its possibilities.

*PROPHYLAXIS*—Preventive measures are dependent upon the ability to recognize in the child the possibilities of a future precox. The recent studies of character anomalies as found in the anamnesis of precox patients indicates the possibility of foreseeing this result in a certain considerable number of cases particularly those presenting the "shut in" type of personality.<sup>18</sup>

The method of procedure in such cases would be to attempt to overcome the defect present in the particular case by educational methods.<sup>19</sup> It would seem that a recognition of the precox character in the child would make it possible to save it from a number of stresses that might prove disintegrating factors. Particularly an open, healthy initiation into the mysteries and problems of sex is important, as this is the rock upon which these cases are often shipwrecked. Protection from undue stresses and a careful education along lines of the development of self-sufficiency in the face of difficulties with a full appreciation of the limits of strength and adjustability is the keynote.

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## DIAGNOSIS IN HEART CASES

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Probably nothing is commoner for the physician whose practice brings him a certain number of cases of nervous disease, than to find that many people are worrying about the presence of heart disease and the fear of sudden death or serious breakdown as the result of heart failure, though there is little or no reason for any such dread. Not a few of these patients are themselves physicians. They have noticed something unusual with regard to their heart, they have caught it missing beats, or have been having queer feelings especially not long after meals, or, as they grow older and stouter, they get short of breath on going up-stairs, and they are solicitous lest their heart should be giving out, or lest something serious should

be developing in it. Some of the patients are very much worried because they have been told by a physician that they had heart disease and they have translated this into the worst possible significance with, of course, the worst possible prognosis.

Until you have seen a number of these cases it will be hard for you to realize how much mental suffering a patient can inflict upon himself by solicitude with regard to his heart. This is particularly true for physicians and sometimes one finds colleagues so seriously disturbed as to be quite unable to go on with their work properly. Prof. Oppenheim in his letters to patients suffering from various forms of functional nervous derangement of the neurasthenic or psychasthenic type, tells one of them, who is suffering so much from such symptoms from her heart as to be almost incapacitated for ordinary duties, that her very attention to it has much to do with the condition. He says: "The heart rebels, as it were, against this surveillance which not only accelerates, but may even inhibit its action and render it irregular." "Whenever you succeed," he says, "in controlling the action of your heart by means of introspection there flows from your brain to your heart a current of nerve impulses which disturbs the automatic movement of that organ. You now know what you have to thank for the irregularity in the action of your heart. I have frequently proved this to myself. If I succeeded in feeling your pulse without you becoming aware of it, holding your attention by a conversation which interested you the action of your heart was always absolutely regular. If, however, I tried it under your control whilst your attention was anxiously directed to your heart its action at once became irregular and you experienced the very unpleasant sensation of palpitation."

Here is the vicious circle of influences that makes so many cases of functional heart trouble, cardiac neurosis, nervous heart or what you will, so disturbing. Something turns up to affect the heart's action, renders it irregular in some way. Probably no factor is more common in this than some disturbance of digestion. The attention of the patient is called to it, perhaps even his physician uses the dread word heart disease, though he may attach to it some adjective like "neurotic or functional" that in his mind neutralizes the dread significance of the term heart disease, though it fails to do so in the mind of the patient. Then the patient begins to

watch his or still oftener her heart, and that organ in Prof. Oppenheim's expressive phrase "resents the surveillance." It becomes even more irregular, or irregularity is added to the feeling of palpitation, that is, the consciousness of the fact that the heart is beating. This further disturbs the patient and leads to more intense surveillance, until you get an exquisite picture of heart disturbance and mental anxiety, mutually related to each other and making each other gradually worse.

I have been very much interested recently in finding that in much older times than we usually think perhaps, they understood these neurotic relations of the mind and the stomach to the heart rather well, and recognized the influence as they were likely to call it, of the hypochondriac region in the disturbance of the heart. In Morgagni's first volume on "The Seats and Causes of Disease," the English translation of which makes such excellent reading, there are certain passages in the twenty-fourth letter "On External Influences upon the Heart" that well deserve to be read by any one who wants properly to appreciate our knowledge of the functional diseases of the heart. Benjamin Ward Richardson said of this volume that "to this day no medical scholar can help being delighted and instructed by this wonderful book." He spoke of coming across it as being like lighting upon the "Pilgrim's Progress" or "Robinson Crusoe" in the midst of the conventional literature that has been preserved for us. The passage in which Morgagni tells of his experience even with a distinguished professor of physic who was bothering his heart by over-surveillance of it, is well worth being in the note book of every one who wants to diagnose heart conditions properly:

"Now that mention is made of the intermission of the pulse, which approaches more nearly to the nature of an asphuxia (*sic*) than even their [in old times they used pulse as plural] slenderness or weakness (for what else is the intermission of the pulse but a short asphuxia, or what is an asphuxia but an intermission which lasts very long?) the causes of this disorder in the pulse are not to be passed over without examination in this place, as the greater part of physicians are greatly terrified thereby, often with good reason, yet frequently without any; as when there is some cause of it in the stomach and intestines, which may either vanish away of itself, or be easily removed by the physician. For in what

manner a palpitation of the heart may be sometimes brought on by flatus distending these parts, and again carried off by the dissipation of such flatus, I have already said; or in the same manner, or one not very dissimilar, it is also evident that an intermission of the pulse has been sometimes generated and gone off of itself in many whom I have known. At another time, in these very same viscera, there is a matter which produces the same effect, by irritating their nerves, with which you know how easily the nerves of the heart consent [reflex heart neuroses]. And this matter is sometimes of such a nature, that it may be readily prevented from harboring itself there. Thus I remember, when I attended to the cure of a young girl who had a fever, and an intermission of the pulse was added to the other symptoms, contrary to my expectations, I was not at all deterred from giving such a medicine as I had before determined upon, that the stomach and intestines might be well cleansed; and even that I gave it so much the more boldly; and that on the same day, after these parts had been deterged, the pulse returned to its former standard. But you will read even in the *Sepulchretum* that Ballonius had not only seen this disorder of the pulse but also a languid and small stroke, removed in the same manner. 'According to the degrees to which the purging was carried,' says he, 'the pulse was restored.' And, indeed there is an intermission of the pulse that is of a far longer continuance as that with which Lancisi says he had been troubled 'for the space of six years,' yet if this intermission should be, as it was in him 'from a consent with the hypochondria,' it may be entirely and perfectly taken away by perfectly restoring those parts."

Morgagni's mention of Lancisi, his great predecessor in the study of clinical medicine in Italy, as having himself been disturbed in this way and for a prolonged period, shows that the modern tendency of physicians to suffer from such affections and take them rather seriously is not due to any special peculiarity of our modern life, its over strenuousness and the supposed tendencies to nervousness which it occasions. Indeed the more we know of the older times the more we realize that all of the nervous affections so often attributed to the modern strenuous life were rife at any time in the cities at least. I suppose that any one to whom brother physicians come occasionally for advice in the matter will agree

with Morgagni's phrase that "the greater part of physicians are greatly terrified thereby often with good reason, yet frequently without any." Personally I have to kick out, metaphorically of course, a physician friend, every so often in order to emphasize for him my assurance that he need not worry about himself. All of them have the habit described by Morgagni of applying their fingers to their wrist and, as can readily be understood in connection with the quotation from Prof. Oppenheim, "perceiving with very great grief that the intermission continually increases." Nothing that I know gives so much confidence to these patients as telling them how historical (not hysterical) their symptoms are. A doctor does not like to be an interesting pathological specimen, though he doesn't mind reminding us of an historical incident. Morgagni said:

"And in regard to what I have said of the nerves which are irritated in the hypochondria, the same cannot be denied of the nerves in any other part, or from any other cause, if disposed in the same manner as these. This was extremely evident to me in a certain very experienced and judicious professor of physic at Bologna, who having happened to observe that his pulse intermitted, and being very anxious and solicitous for that reason (as if it were impossible it should happen from an accidental cause), was ever now and then, as is generally the case with men of physical science, applying his fingers to his wrist, and perceived, with very great grief to himself, that the intermission was continually increasing: yet the very same gentleman after having not disdained to take my advice, which was to apply his fingers to his pulse much less frequently; and having in consequence thereof, less increased the anxiety of his mind upon the occasion, the intermission soon became much less observable; till at length, not attending to it, it entirely vanished away."

Morgagni insisted, moreover, that not only might the heart itself be affected, but that the arteries might be disturbed by emotions and that these would react on the heart. The case he quotes in the matter is rather unusual, but has therefore its special interest. He said: "But I learned from a patient that not only those nerves which go to the heart but even those which are subservient to the arteries or muscles that lie near them, may also vary the motion

of these arteries; for this patient, having but just escaped the danger of a most violent disease, was affected with a very great sadness, on account of unfavorable news that had been brought to him unseasonably; and this sadness was so much the greater, in proportion as he endeavored to conceal it: and I found his pulse at a time when I expected no such thing, at first in both the wrists but on the following day on the left wrist only, to labor under all kinds of irregularities, so as to make it very evident, as the pulse was extremely equal at the same time in the right arm, that the cause related only to the left brachial artery; which did itself also soon after return to its natural motions when the grief was alleviated, and the nerves were brought back to their former disposition."

There is only one phase of the diagnosis of heart disease that I shall discuss on this occasion. That concerns the necessity of setting the patient's mind at rest and, above all, not disturbing him by giving an exaggerated significance to symptoms that may be present. Personally, I do not think that the term heart disease ought ever to be used in this connection at all. It has too many serious connotations and acts as an extremely unfavorable suggestive influence on patients. If the term were used in its original significance it might be different. Heart dis-ease only means heart dis-comfort. This is exactly what the patients are suffering from without there necessarily being anything more than passing discomfort. Unfortunately, heart discomfort is commonly associated with organic disease and then the word disease, in general, has come to mean a very definite pathological condition. It would be much better to say simply to patients, You have a nervous heart. This is not likely to disturb them and usually is a source of reassurance. It might even be well to explain to them, if some one has used the term heart disease with regard to their ailment, that that word may only mean the presence of something in the heart action that brings about discomfort.

After this preliminary, the most important factor in preventing patients from suffering from such solicitude with regard to their heart which not only disturbs their feelings, but also interferes with their heart action and adds to their symptoms, is not to assume a knowledge of the significance of symptoms that as yet we really do not possess. We have learned much about heart disease and yet we have only learned to know how much is left for us to learn.

The more we see of patients suffering from heart affections of many kinds the more we realize that the individual counts far more than the particular condition that is found. As in everything else, in any form of heart trouble, it is not heart disease in the abstract that we have to study but the particular individual suffering from a heart affection. There are men who have even valvular lesions and yet live twenty, thirty, forty years and die not from their hearts, but from some intercurrent affection, and without their heart being a factor in the terminal stage of life. I once saw a patient in Vienna who was very proud that he had lived some forty years after Skoda diagnosed a mitral lesion and some thirty years more than Skoda himself. It was this latter fact that seemed particularly to please him, as it often does patients who outlive their physicians in spite of an unfavorable prognosis. He still had his mitral murmur and probably had a leakage at his mitral valve, for he had a rheumatic history, but he was now past seventy.

Unfortunately, ever since Laennec's original discussion of adventitious sounds in the heart and Corrigan's careful investigation of their meaning in aortic disease with subsequent developments in the nineteenth century that completed the chapter of heart auscultation, there has always been a definite tendency to exaggerate the significance of these symptoms of heart affections to the detriment of other sources of information, and sometimes indeed to the neglect of precious auxiliary knowledge that could be obtained rather easily by the hand and the eye. The study of the pulse, for instance, in the old days was carried to a high degree of perfection and was made to mean very much; the neglect of it has taken away one significant adjuvant in these cases. It has been pointed out in recent years that blind men do not feel better than those who see though they are able to derive so much more knowledge from their sensation of touch. Their practice does not lead to development of more touch nerves, there is no compensatory increase of sensation for the loss of sight from the physical standpoint, but their attention has been better trained and as a result slight variations in sensation that pass quite unnoticed to the seeing person convey messages to the blind that are of import because of their skilled training in the detection of these particular points. In an absorption in the use of hearing in the diagnosis of heart affections we

have lost by neglect some of the skill that used to mean much in the study of the pulse.

While training our hearing we have often failed to realize the limitations of knowledge derived from it. William Stokes, the distinguished Irish physician, to whom we owe the introduction of the stethoscope into English medicine (his little book on this subject was written when he was not yet twenty-one years of age), and whose attention during a long life was centered on diseases of the chest, has some striking expressions with regard to the liability to error of diagnoses made from hearing. His authority as an expert in heart disease is undoubted, and the translation of his books into the French and German languages, and the estimation which he enjoyed among the best professors of medicine on the continent, show how thoroughly he was appreciated. In his volume on "Diseases of the Heart" he calls attention to how much care must be exercised in making the diagnosis of heart lesions from the murmurs present in the heart. As a matter of fact, the more experience a physician has had in heart disease the more careful he is not to make positive declarations until after repeated examinations and due consideration of all the elements in the case as well as the heart murmur or murmurs. Indeed, the state of the individual is much more important as a rule for certain diagnosis than the adventitious sounds that may be heard in the heart. Stokes insisted on this. He said: "We read that a murmur with a first sound, under certain circumstances, indicates lesion of the mitral valves. And again, that a murmur with the second sound has this or that value. All this may be very true, but it is always easy to determine which of the sounds is the first, and which is the second? Every candid observer must answer this question in the negative. In certain cases of weakened hearts acting rapidly and irregularly, it is very often impossible to determine the point. Again, where the pulsation of the heart is not much increased in rapidity, it is sometimes difficult to say, when a loud murmur exists, with which sound the murmur is associated. The murmur may mask not only the sound with which it is properly synchronous, but also that with which it has no connection, so that in some cases even of regularly acting hearts with a distinct systolic pulse and the back stroke with the second sound, nothing is to be heard but one loud murmur. So



great is the difficulty in some instances, that we cannot resist altering our opinions from day to day as to which is the first and which the second sound. To the inexperienced the detailed descriptions of such phenomena as, the intensification of the sounds of the pulmonary valves; of constrictive murmurs as distinguished from non-constrictive; of associations of different murmurs as the opposite sides of the heart; of pre-systolic and post-systolic, pre-diastolic and post-diastolic murmurs, act injuriously first, by conveying the ideas that the separate existence of these phenomena is certain, and that their diagnostic value is established; and secondly, by diverting attention from the great object, which, it cannot be too often repeated—is to ascertain if the murmur proceeds from an organic cause; and again, to determine the vital and physical state of the cavities of the heart. . . . If the question as to the practicability of the negative diagnosis with reference to either orifice, be raised, it appears probable that where a mitral murmur is manifest, it will be easy to determine the absence of disease of the aortic valves than to declare the integrity of the mitral valves in a case of aortic patency. The experience of each succeeding day devoted to the study of diseases of the heart will make us less and less confident in pronouncing an opinion as to the absence of disease in any one orifice, although no physical sign of such a lesion exists, if there be manifest disease in another, or again, if there be symptoms of an organic affection of the heart."

If the signification of heart murmurs can be thus uncertain for an expert who has spent most of his life in studying them, we can readily understand how easily the less expert can be led astray. As a matter of fact it is always the man without very much experience who is ready to pronounce definitely with regard to heart murmurs and to declare that they mean a particular form of heart disease. Of course, when there are many other signs, when there is some edema of the limbs, some ascites, some congestion of the lungs, in mitral cases, or congestion of the liver, then the significance of murmurs may be readily determined. It must always be understood, however, that murmurs alone may mean very little. Indeed they may mean nothing, and be present to-day and absent to-morrow, or be present when the patient has been taking no exercise and absent after some exercise is taken, present when a severe

strain has been undergone as after a Marathon race, yet gone completely after twenty-four hours. In general, adventitious sounds in the heart require more careful control by other modes of observation than are generally employed, and require especial inspection and percussion if their real significance is to be adjudged.

All this is particularly true with regard to patients in whom there is the suspicion of the existence of a neurotic heart condition or functional heart disease. The German school is much more prone to emphasize the significance of, and translate unfavorably, signs found in the heart, such as murmurs or intermittency, than are the French and English schools of medicine. The English school particularly, as can be very well appreciated from Stokes' expressions, are very conservative and study the individual much more than his heart. Sir William Broadbent, the most distinguished English specialist in recent times, has been particularly insistent in this matter. Almost more than any other he has emphasized the fact, that in connection with indigestion, intestinal as well as gastric, all sorts of symptoms, especially curious intermittencies, may occur that are nothing more than functional disturbances. He goes so far as to say that any signs found in the heart which can be directly connected in their variations with variations in the conditions of the digestive organs must be considered as functional. His words in the matter are very emphatic.

Old Professor Gerhardt used to say to his students in the second medical Clinic at Berlin when they had spent much time in making a heart examination, "Is the patient's apex beat displaced?" If the answer was, no, then he would say, "Well—there is nothing the matter with that patient's heart or at least nothing for which we would care to give any medicine or suggest any treatment." To the American student fresh from teaching that seemed to emphasize (though when analyzed carefully it did not prove to be quite so positive as it seemed in memory) the all importance of heart murmurs and of normal and adventitious sounds of the heart and insisted on auscultation as absolutely the most important diagnostic methods for heart disease, this usually proved to be rather a startling surprise. The examination of a heart in most cases in past experience consisted in listening over the heart area,—sometimes, indeed, without completely exposing the

patient's chest and drawing conclusions from what one heard. Here was the diagnosis, at least the negative diagnosis, of heart disease by the hand and the eye alone.

All that I would say then is be not too sure of your diagnosis in heart cases. The first rule of medicine has ever been and must ever be to be sure to do no harm. It is the easiest thing in the world to do harm by disturbing a patient with regard to his heart, and the harm may be all the greater if there is really something serious the matter with the heart, though its compensations has not yet been seriously disturbed. Our excuse to ourselves is in these cases that we may thus prevent further damage to the heart. When men are living lives in which over-exertion is easily possible or are taking on too many responsibilities there may be some justification in this. Under ordinary circumstances, however, it is much easier to do harm than good. Inactivity is bad enough for heart cases. Inactivity plus depression and brooding over their condition is probably the worst possible thing that could happen to patients. Until there are very definite signs of some failure of compensation or the displacement of the apex beat showing dilatation, the word heart disease should not be uttered to a patient. Murmurs above all should never alone be considered sufficient to justify our diagnosis of heart disease. For until the muscle is affected there is no real heart disease, but only a disturbance of its mechanism.

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#### DIFFERENTIAL DIAGNOSIS OF CASES WITH AFFECTIONS APT TO BE MISTAKEN FOR CEREBRAL TUMOR

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It will be instructive to relate a few examples which presented symptoms arousing suspicion of a neoplasm in or near the cerebrum, which in some cases, however, were derived from other causes than neoplastic growth.

If Cushing's experience is the usual one, the commonest mistake where a tumor affects the cerebrum is to diagnose hysteria. Formerly there was some excuse for this, as hysteria was supposed to be characterized by certain stigmata, the presence of which was supposed to be enough for a diagnosis. But we know now that such a stigma as inverted color fields is a sign not of hysteria, but of increased intracranial tension. We know also that hysterical anesthesia is induced, evanescent and easily removable. We know that the hysterogenetic zones are merely the normal erethistic areas which most easily provoke instinctive defense reactions, and the intensity of these varies in different individuals without necessary relation to their hysterizability or that they may be the artefacts of suggestion. Contractures and palsies too are now also clearly comprehended as direct or indirect results of suggestion from without or within. Without further citation, we can in short affirm that the stigmata are just as psychogenic and as variable by suggestion as are the accidents of hysteria themselves; for it is now shown that most of the trophic disorders which psychological mechanisms are incapable of producing are either the results of intention, whether from mythomaniac disorder or the result of deliberate simulation, whether puerile or ingenious; or else that they are the signs of such disorder as trophedema, vascular or secretory neurosis; in short, that they are non-psychogenic and have nothing to do with hysteria.

Again, the deep reflexes are not in reality modified hysterically, although here two qualifications must be mentioned. Firstly, by imitative suggestion, a reflex may appear to be modified, but it is not difficult as a rule to detect intentional interference of the patient with the response of his lower neurones. A very little address and experience suffices to detect this. Secondly, systemic states which interfere with the nutrition of the neurones often modify reflex responses, and sometimes do so unequally in different parts of the body. Such toxic states very often also increase the patient's suggestibility by lowering the threshold of the associational processes. In this way is presented a picture of somatic perturbed reflectivity along the hypersuggestibility. Such a picture is familiar to all of us in cases of incipient paresis, severe alcoholism and in many acute toxic-infectious states. It is not legitimate to say that the hysterical state of these patients is responsible for the perturba-

tion of their reflexes; for a common pathogen is the source of both.

When these considerations are borne in mind, and are applied with a knowledge of the technic of clinical neurology, very many fewer cases of cerebral neoplasm will be labelled hysteria; for the presence of any of the preceding non-psychogenic signs will no longer be accepted as hysterical, but will arouse the certainty of somatic disorder.

A pregnant illustration of these considerations was the case of a young girl who was one summer (1906) in the *salle Pinel* at the *Salpêtrière*, and whom Professor Déjérine treated for several months as a hystero-neurasthenic on account of intellectual torpor, peculiarity of disposition, of language, of humor and fugitive headaches. The following winter I observed the same patient at the *Hôtel Dieu*, where she was admitted to Professor Ballet's ward because of an amnesic aphasia for substantives. It was not until I detected an incipient papilledema some weeks later that neoplasm was diagnosed.

The preceding case is merely an illustration of how even great neurologists blundered before the ideas of Babinski regarding hysteria had prevailed. The following case illustrates the procedure now that those ideas can be utilized.

*Paralysis of the arm removed by suggestion although a cerebral neoplasm was present.* A girl of 16, M. H., was referred to Dr. N. P. Barnes on account of paralysis and anesthesia of the right arm, and right abdominal pains, and frequent aching on the right side of the head not alleviated by suitable glasses. There were vomiting spells alternating with bulimia. The headache, which had set in six months before, would occur gradually, terminating in a few minutes by nausea and followed by vomiting. Dizziness would ensue, and the staggering compelled her to hold on to maintain her balance. As far as she recollected she tended in no particular direction. There were now and then sudden dimness of vision, inability to read, and sparks before the eyes. There were dull periodical pains in the breast and abdomen. Until two weeks ago, she had diurnal "spells," so that malaria had been diagnosed. These were not Jacksonian, but consisted of jerking attacks on waking up, which she sometimes could not arrest; they were

not localized, and never entailed loss of consciousness. She was very weak and tired rapidly, and had fallen from 135 lbs. to 109 lbs.

Examination. Motility. Left labio-nasal fold deeper than the right when contracted. An apparent paralysis of the left arm was immediately removed by suggestion-persuasion. After this, there was no inequality to resisted movements. There was, however, a dysdiadocokinesis, especially on the left when the forearms were rotated, but not with any other movements. Other cerebellar signs were negative; but there was slight slow, coarse nystagmus on looking to the extreme left. There was no contra-lateral synergic abnormality.

Rotation tests. After being turned in either direction she tended to fall backwards, perhaps slightly to the left. When spun from right to left she said the objects seemed to spin in the direction in which she spun. When spun from left to right objects appeared to travel from left to right also.

Reflexes. Showed no inequalities or excess, the radial and triceps were perhaps diminished, the latter requiring reinforcement. The pupils were equal and contracted readily.

Sensibility. The left arm palsy was preceded for two days by a tingling there, which soon disappeared. At first, she said that objects were more difficult to feel on the left arm, but she changed this opinion presently. Visual acuity was normal; but the color fields were inverted and there was a slight papilledema. Two weeks later, the right plantar reflex had diminished, deep reflexes were sluggish especially to right; but although the optic disks were more edematous, especially to the right, inversion of the color fields was more difficult to elicit.

It was ascertained from friends that it was mainly the left arm which she jerked, and that this would occur in sleep. She was apathetic, but declared that her memory was better than before. She said she did not feel like doing the seven-from-a-hundred subtraction test, and she said that four plus three made eight.

In spite of the rapid cure of paralysis by suggestion, I believed that a neoplasm was present; but wished to verify the side on which the paralysis really occurred, as there was a discrepancy in the history, it being stated that the right arm was paralyzed, while when I observed her, it was the left arm. She was accordingly

permitted to return to Virginia and was told to report in a month. This she failed to do and we have lost sight of the case.

At the time this girl became paralyzed, poliomyelitis was epidemic in Washington; and the terror of the disease was at its maximum. It was natural that the friends believed that she was suffering from that disease. It is very likely that the slight paresthesia perhaps with paresis which had been present was suggested into a complete flaccid paralysis by the fear of poliomyelitis. That the paralysis was completely removed by suggestion-persuasion proves it to have been purely psychogenic.

The absence of reflex modifications at first, along with the rapid removal of paralysis and hyperesthesia would have pleaded against the diagnosis of neoplasm, but for the characteristic history of the headache, dizziness, vomiting, dimness of vision and the presence of ocular changes. Reflex changes two weeks later confirmed the diagnosis.

I have since learnt that the patient was operated upon with fatal result, and a tumor found post mortem in the temporal lobe.

*Luetic meningitis of the anterior fossa with uncinat gyrus syndrome simulating neoplasm.* A woman from West Virginia, aged 41 years, was referred by Dr. Wilmer. She had complained of pains in the eyeball and feelings of distress in the vertical and lateral muscles there; and she is annoyed at having to turn her whole head when she changes the direction of her look.

Previous history. Although she had had no previous visual difficulties, the muscles of the eyes have always troubled her; and ten years ago similar pains and muscæ volitantes led her to consult Dr. Wilmer and receive relief. She had had malaria until ten years ago, when she left Washington. Eleven months after her marriage, a miscarriage occurred; and after this she had a severe oophoritis, which was cured by "electrical treatment." She had several other early miscarriages and a child which died at once after a prolonged labor. A uterine discharge persisted in spite of curettage and cervectomy; but she had no discomfort, weakness or pain since the operation, and otherwise felt in good health as a rule; but at times she became exhausted and nervous, sometimes to the point of tears; from this she was often relieved by a drive or a walk. These attacks might last for a week; but did not cause

insomnia. For three months, she had been somewhat depressed, and in the morning felt as though a great stone lay on her chest.

Present condition. There is dull frontal headache and an occasional throb above the left orbit. No dizziness, nausea rarely, although regurgitation often occurred. There often occurs a sensation in the nostrils as of an odor which permeates everything she eats. It is not unpleasant, but is like that of a static electric machine or ozone tube. It may last only a few minutes or some hours; and it always occurs suddenly and quite independently of her thoughts.

The reflexes. Patellar lively and equal. Achilles left greater than right. Triceps over-active, left greater than right. Plantar, the great toe is immobile, the movement of lesser toes is very slight, especially to left. Abdominal reflex is almost absent, but volitional contractions make it hard to examine. The response is at least irregular and delayed.

Sensibility was normal to wool, pin, deep pain, cold, heat attitudes and vibration, except that over the dorsum of the right foot the tuning fork is felt as a burning, and she believed that it still vibrates while stationary. As this mistake was not committed upon the arms, a slight defective sensibility of the lower limbs may be inferred. There was no loss of smell or taste. There was no hemianopia.

Motility. No weakness, except perhaps in the facial movements, nor paralysis; no ataxia. The eye movements were complete. The diadocokinesis, however, was less quickly performed with the left arm. There was no dysergia on mounting a chair or leaning back.

The pulse beat 120 during examination. The urine was variable in quantity, but no abnormal constituents were found. She seemed soporific, but declared herself to feel nervous and excited. Although she declared herself to be of a nervous family, no stigmata of hyper-suggestibility were found; nor had she become subject to phobias, anxiety, obsessions, manies or mannerisms. The following report of the case was accordingly made:

I have examined your patient, Mrs. S. The only significant signs that I found were the right optic atrophy, an inequality in the Achilles reflexes, the left being more active than the right, a similar inequality in the triceps and radial, a diminution in the plantar



reflexes, especially in the left, an occasional misinterpretation of sensations of deep pressure upon the lower limbs, it sometimes being called heat, a relative diadocokinesis in the movements of the left wrist, and an apparent soporific state during examination. She declared on the contrary that she feels excited, and her pulse frequency of 120 per minute bears this out. There are no objective signs to enlighten me about her parosmic symptom; and it might possibly be elucidated by a rhinologist. The symptoms (headache, depression and regurgitation without cause), and signs present now concord with a neoplasm of very slow growth pressing upon the uncinate gyrus in the neighborhood of the optic nerve, chiasm or tract, the relative exaggeration of the reflexes of the left side being due to pressure from a distance on the motor projection fibers, and the sudden olfactory paresthesia being due to the vascular modifications which oscillate to such a degree within the cranium. I do not believe that pressure on the olfactory tract or bulb would occur without giving rise to some loss of smell, which is not present. The symptoms, however, are not enough for a positive diagnosis as yet; and I recommend that she be kept under observation and seen again at the end of six months. It is possible that the Wassermann reaction might throw light on the etiology, and guide us in treatment.

This appeared to show that the last supposition was correct; as Dr. Wilmer informed me a year ago that the symptoms had cleared up after potassium iodide had been given.

*Severe intermittent claudication of cerebral vessel causing hemiplegia resembling that of neoplasm of the cerebrum.* A large stout, strong, single woman, aged 26 years, seen with Dr. I. H. Lamb, October, 1910, because of several attacks of right hemiplegia. The patient is a teacher of marked ability and vivacious disposition who makes the best of circumstances and tries to minimize her sickness.

Two years previously she had appendicitis followed by two weeks of fever, not of rheumatic type, in which she developed a mitral systolic bruit, which disappeared in six months, but which later recurred during the attacks of hemiplegia. The right leg had begun to drag a year ago, and her mother believes that the mouth had been drawn to the left for sometime. But the first attack occurred only two months before I saw her. In this she fell

unconscious; and after this was aphasic and right hemiplegic for two days; after which there was rapid improvement; until three weeks later, a similar attack occurred, without a fall, however. About a month later, Dr. Lamb observed her in a third attack; when the pupils were wide and paralyzed, the pulse rapid and feeble; she was hemiplegic, aphasic and disorientated, but spoke after three hours with marked dysarthria; she complained of severe pain in the neck. After this, paralysis partially remained; as within two weeks, three similar attacks occurred, the last one, however, without aphasia. Ptosis and swelling of the eyelid and jaw occurred in the attacks.

I first saw her at eleven p. m. (during an attack which had commenced at nine p. m.), while she was recovering from the aphasia of the attack. There was then no defect of intelligence, memory, comprehension or judgment; but she found it difficult to express her ideas on account of the dysarthria.

Motility. There was complete right hemiplegia, including the muscles of the face, except the brow; the tongue could be protruded only very slightly, and the right eye could scarcely be closed alone, and the effort induced tremor of the lid.

Reflexes. The patellar, Achilles, radial and masseter were much exaggerated, the last less so on the left. The plantar reflexes were very feeble but distinctly in flexion, while the abdominal response was very active.

Sensibility. Subjective tingling was complained of on the whole right side. There was integrity of the sense of attitudes, of deep pain, of spacing everywhere; but there was a diminution, especially over the right tibia, of the perception of prick, temperature and vibration. On the body, the difference of threshold was felt within half an inch of the mid-line. She wrote with great difficulty, but there was no ataxia. The voice was monotonous, and now and then she repeated or omitted a word. There was no papilledema, but marked inversion of the visual fields.

I was unable to decide between vascular and neoplastic involvement of part of the middle cerebral distribution in this case. As a precaution, the Wassermann reaction was tried, but proved negative. The absence of Babinski's toe sign and the fact that the perturbation of the esthesia reached so near the mid-line caused

serious consideration of hysteria as a diagnosis; but the character of the facial paralysis was such to preclude this.

In spite of the history of a cardiac lesion, hemorrhage, embolus and thrombus of a middle cerebral branch could be excluded by the recurrence of and rapid recovery from the attacks. But the vascular variation of neoplasm was a most likely source of the attack.

The next day the history was further probed. It transpired that she had had headaches and nausea for at least six months before I saw her; there had, however, been no vomiting. She had always had "dizzy" attacks, which she attributed to unusual use of the eyes and giving up glasses. Sudden attacks of aphasia and incapacity had occurred in school for several months. As a school-girl, an attack of spasm of the eyelids occurred, and once she had tinnitus. Two years ago, she used to have sudden parasthesiæ of the right arm and jerkings of this in sleep.

A week later, no further fit had occurred. Sensibility was normal except for a slight impairment of perception of vibration of the right hand. The deep reflexes were less exaggerated. The plantar reflexes were less feeble, especially the left. Both the combined flexion test and the synergic extension of the leg on raising its fellow were slightly positive. The right grasp was slightly weaker than the left. The dysarthria and aphasia had disappeared, and there was no inversion of the color fields.

In my opinion, further observation was needed for a diagnosis; although I inclined to believe in an intermittent claudication rather than a neoplasm, in spite of the fact that searching inquiry revealed no symptoms of vasomotor ataxia in the family. A few weeks later, the appendix was removed by Dr. Balloch on account of the chronic discomfort given ever since the attack two years before. Since the operation, there has been no paralytic nor paresthetic attack, and the patient's face is now straight, and she walks perfectly well.

*Nephritis and cerebral edema.* But delicate though the diagnosis may be when the symptoms of cerebral tumor are presented in cases of luetic meningitis, intermittent claudication of cerebral vessels, or when a clinical picture of hysteria is presented in a syndrome created by a neoplasm, the diagnosis is perhaps more difficult still when we are dealing with results of nephritis. As the

functional efficiency of the kidneys undergoes variations, a single measurement of its excretory capacity, even by phenolsulphone-phthalein may not be sufficient for a diagnosis; and a slight quantity of albumin in the urine by no means precludes the possibility of a cerebral neoplasm in addition to a nephritis. The papilledema in neither case has pathognomonic characters, as was formerly believed.

Besides uremic edema may occur focally, and give rise to inequalities in reflectivity, or may preponderate upon certain portions of the cerebrum, causing a predominance of symptoms of either disordered motility, sensibility, equilibration or intelligence. Indeed, arteriosclerotic changes may lead to disorganization of some region and produce permanent symptoms still more suggestive of cerebral invasion. The following case illustrates these difficulties:

Mrs. N., 40 years old. Cerebral tumor suspected by Dr. Barnes Hooe, who called me. Previously diagnosed albuminuric retinitis by Dr. Green and others. Headache all her life. Rush of blood to brain began last winter, ten months ago. Since then has been dizzy. Vomiting began seven months ago. Vision lost five months ago following a dizziness and specks before eyes since illness began.

Facial palsy, sciatica and dropsy had preceded the whole attack by two months along with tinnitus and vertigo. Convulsions occurred five months ago and she became "flighty" and was sent to a sanatorium without improvement.

Reflexes all feeble, left Achilles being absent. Right facial palsy. Sensibility and motility normal, but vertigo easily provoked and she falls backwards. Quite blind. No deafness. Pulse rapid, small, of low tension. Slight albuminuria. No mental hebetude. Very stout. No edema.

Milk and fruit diet was prescribed.

Three weeks later. Reflexes less feeble. Patellar right greater than left. Achilles still absent. Plantar flexion left hyper-excitable with foot inversion. Optic disk shows atrophy and edema. Old hemorrhages in left retina. Urine shows less albumin and casts. The result of the phenolsulphonephthalein test was as follows: first hour, 116 c.c. S. G. 1006 phthalein 29.4% of 6 Mg.; second hour, 25 c.c. S. G. 1012, phthalein 11.6% of 6 Mg. Total for two hours 40%.

As the normal for two hours is about 80% the reduction

is considerable although Dr. Rowntree of Baltimore, who made the tests, informed me that it is not necessarily pathognomonic unless considerably lower than this.

But the most difficult diagnosis of all is when we have to deal with cases of so-called serous meningitis; for the relief these cases obtain from acupuncture of the ventricle may not be permanent, and is of the same character as is that gained when the stasis of fluid is due to neoplastic obstruction. As we are not yet in possession of sufficiently precise criteria for diagnosing this kind of what has been called pseudo-tumor, I do not think this occasion warrants my further discussion of this class of cases.

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### ACUTE FOCALIZING PARALYSIS. EPIDEMIC AND PANDEMIC. DIFFERENTIAL DIAGNOSIS

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Brooklyn-New York

Malaria, in the early history of the Middle West, was the omnibus diagnosis which embraced every variety of medical disorder. When poliomyelitis became epidemic the reverse of this situation obtained, the unrecognized disease with its many confusing types, being diagnosed as any one of a most extraordinary list of ailments. From reports received during the Wisconsin epidemic of 1908, and from recent literature, the following list of mistaken diagnoses was compiled. They are given with differential points to aid in making a diagnosis by exclusion.

*Meningitis.*—Epidemic cerebrospinal, tuberculous, suppurative. Meningism is one of the diagnostic signs of the onset of infantile paralysis. It may vary in degree from a slight nuchal tenderness and rigidity to the most extreme type of meningeal irritation, the meningeal form of the disease. The diagnosis is usually made clear by the appearance of paralysis. Cases appear coincidentally with the epidemic, with meningitic symptoms and without paralysis. Wickman found clinically and by autopsy, that such cases ran the "whole course as a meningitis serosa."

It is of great importance to make an early diagnosis. When the

case simulates an acute meningitis, or a tuberculous meningitis, lumbar puncture with an examination of the spinal fluid, is the ready means of positive diagnosis. The technic of this procedure should be known to every physician. It is not difficult, demanding only the most perfect asepsis, and requiring an inexpensive armament, and an exact knowledge of that point at either side of and below the lumbar spinous process, at which the needle enters the spinal canal without obstruction.

In a case of infantile paralysis puncture will be followed by a rapid drop flow, or even spurting of the spinal fluid. Ten c.c. is sufficient for purposes of examination. The fluid will be found clear, or exhibiting a slight shimmering or opalescence in the pre-paralytic stage. On examination it will be found to be sterile. Lymphocytes, small and large, make up 90 per cent. of the white cells with a very few polynuclear leucocytes. The supernatant fluid after centrifuging, will give a marked protein reaction, with the Noguchi butyric acid test.

Tuberculous meningitis will be indicated by a flocculent fluid. If fluid is allowed to stand twenty-four hours, a fibrin network will form and be plainly demonstrable. With Heller's test for albumin, in tuberculous meningitis, the percentage of albumin will be high and a thick cloud will form. In the spinal fluid of poliomyelitis there will be only a faint reaction to this test.

In tuberculous meningitis the bacillus may be demonstrable, but this is so uncertain that its absence cannot be considered a diagnostic point.

In epidemic cerebrospinal meningitis the meningococcus will be found in the centrifuged sediment of the spinal fluid.

In suppurative meningitis pus will be present in the fluid.

In streptococcus meningeal infection following middle-ear disease there will be a clear history of the exciting cause.

"Meningism may complicate any acute contagion, especially broncho-pneumonia. Here the differential diagnosis is dependent on the previous history of the case." (Sofian.)

It is the cerebral form of poliomyelitis that is constantly mistaken for cerebrospinal meningitis, or tuberculous meningitis.

*Epidemic Cerebrospinal Meningitis.*—Early in an epidemic of poliomyelitis, the cases of an encephalic type are mistaken for cases

of epidemic cerebrospinal meningitis; and this is not surprising, for the symptoms of the vicious onset are the same. Vomiting, basilar headache, cervical rigidity, high temperature, and delirium, with or without convulsions, usher in the attack in both instances. Isolation and quarantine are recommended while making a study of the case. Without examination of the spinal fluid, it may be impossible to form a diagnosis during the first 48 or 72 hours. The second or third day, the characteristic paralysis is apt to appear in cases of poliomyelitis. Local palsies are extremely rare in epidemic cerebrospinal meningitis. A slight diagnostic paralysis might be overlooked. The ptosis of one eyelid, difficulty in swallowing, an aphasia, a strabismus, jerking of the eyeball, have each been the solitary symptom of motor paresis.

The temperature in epidemic meningitis is high at onset and remains high with an intermitting curve. The temperature of poliomyelitis is high at onset, and may range much higher than is usually given, up to 110 degrees; this temperature is, however, usually pre-paralytic, and the temperature drops to 100 degrees or less on the third or fourth day, gradually declining from there to normal with no secondary elevation.

The pulse of poliomyelitis is extremely rapid in the pre-paralytic stage, ranging from 110 to 200. The pulse of epidemic meningitis has more of the characteristics of the compression pulse.

Delirium may be marked, especially in sleep, but will lessen with the improvement of other symptoms in the one disease; in the other the delirium, though broken by lucid intervals, may progress to a stuporous condition, and coma.

The spastic spine in cerebrospinal meningitis is pathognomonic. The head is fixed and immovable. In poliomyelitis, while the rigidity is marked, yet the patient himself can turn his head from side to side.

Kernig's sign will give a similar reaction in each leg in cases of cerebrospinal disease, while in infantile paralysis there will be elicited a much more spastic condition in one leg than in the other.

*Suppurative Meningitis.*—In meningitis secondary to pneumonia, broncho-pneumonia, middle-ear disease, or the meningism which may complicate any acute contagion, there will be a history of the preceding trouble.

The common complication of middle-ear trouble following influenza or grippe should be kept in mind, for it may precede a meningitis.

*Tuberculous Meningitis.*—In tuberculous meningitis the condition is secondary to a previous infection, and the history of individual and family are to be considered. It occurs alike in infants, adolescents and young adults. In poliomyelitis a sudden acute onset will ensue after a previous state of perfect health. In tuberculous meningitis there is a gradual onset, with a history of some days or weeks of malaise and temperature. In tuberculous meningitis there may be delirium, convulsions, followed by coma; this also may be seen in poliomyelitis, but in the former case apathy will be marked, while in infantile paralysis there is an alert, strained look, and if the patient falls into a semi-stupor he will rouse at once to answer a question; will, in fact, react to his surroundings and complain of many disturbing factors, such as a ray of sunlight, a noise on the street, the jogging of his bed, to which the sufferer from tuberculous meningitis is quite indifferent.

In tuberculous meningitis the spinal rigidity is not extreme, it may be elicited on examination. In poliomyelitis, the child may refuse to drink, from the pain engendered. A little girl couldn't "manage" a lemonade straw, and it was only after considerable effort, and the bending of a glass tube that she could be induced to take the iced drinks she was craving. The nursling will not always nurse for the same reason; the bending of neck or any movement of head is too painful.

In both diseases hydrocephalus may develop, with bulging of the fontanelles. Cerebral palsies are also seen. Local palsies in tuberculous meningitis are usually transitory and shifting. They are said to be due to the shifting of the fluid in the ventricles, and may occur in face, arms or legs. The paralyses of poliomyelitis are not shifting or transitory; some mild cases develop only a paresis which rapidly clears, but these cases are of so mild a character that there is no danger of confusing them with tuberculous meningitis.

The temperature in tuberculous meningitis is characteristic; afternoon rise to 103 degrees, and in the late stages a high intermitting range. Poliomyelitis of the cerebral type begins with a high



temperature, which rapidly subsides, and remains within one degree of the normal throughout the illness.

The mental state of the patient in the polioencephalic form of poliomyelitis is perhaps the most decided diagnostic point. The delirium or stupor, if present, lightens, and the patient proceeds to recover. They do not seem to be suffering from brain disease. A case in the Connecticut epidemic, with a complete hemiplegia, developed an aphasia on the fifth day, but "looked bright" (Sofian).

	<i>Poliomyelitis cerebral type, with or with- out meningitis</i>	<i>Cerebrospinal meningitis</i>	<i>Tuberculous meningitis</i>	<i>Suppurative meningitis</i>
Season	Maximum, late summer	Winter and spring		
History	Presence of epidemic in community. Hist. of exposure	Presence of epidemic	Tub. infection of patient or family	Otitis media; mastoiditis; sinus infection
Nutrition	Healthy, robust, and active.	Impaired	Impoverished	
Onset	Acute	Acute	Gradual (Early stage slow)	
Pulse	Rapid. 120-200	Slow	Moderately rapid	
Temperature	High, 1 to 4 days, declining by crisis as paralysis appears	High from onset; intermittent curve	Characteristic p.m. rise; high intermittent range in late stages	
Mental state	Excitable, staring	Stuporose	Apathy marked	
Bowels	Paresis and obstipation			
Skin	Multiform rash	Rash. Herpes.	No rash. No herpes	
Cervical rigidity	Present, but can move head from side to side	Head fixed and immovable	Not marked	

	<i>Poliomyelitis cerebral type, with or with- out meningitis</i>	<i>Cerebrospinal meningitis</i>	<i>Tuberculous meningitis</i>	<i>Suppurative meningitis</i>
Kernig's sign	One leg much more spastic than other	Equal in the two legs		
Local palsies	Characteristic; regressive but not transitory. Head, trunk, or extremities	Rare. Face or eyes only	Transitory of face, arms, legs	
Delirium	During sleep and ceases with oncoming of paralysis	With lucid intervals	Delirium, followed by convulsions and coma	
Tremor	Marked			
Spinal fluid	Increased pressure. No organisms. Clear or a slight shimmering. No fibrin clot. Hypoleucocytosis. (Lymphocytes 90%.) Albumin, a trace, and protein	Meningococcus. Turbid. Albumin	Koch's bacillus. Turbid, flocculent. Albumin % high. Fibrin % high	

*Other Diseases of the Cerebrospinal Axis, with or Without Paralysis.*—The confusing nomenclature of acute nervous diseases varies widely in the accepted text-books. It is evident to the mere student pathologist that indicative symptoms have been classified and described as separate diseases. The cerebrospinal axis is the most highly developed and specialized organ known to man. A large class of the manifold lesions ranging from a mild pressure edema to necrosis, which may occur in any one of its intricate parts, disturbing one, or any possible combination, of its functions (which govern and induce every voluntary and involuntary act relating to life), may have been incited by one unknown destructive infection.

The key to this confusion of terms may be found to be the acute transmissible virus known to have produced the harrowing pandemic of poliomyelitis. Until this recent series of epidemics, the scientific observer occupied an analogous position to one of the three blind men who examined the elephant, for he could only describe and report the findings of a small group of cases, two or three in a season it may be, and these perhaps already in the chronic stage of the disease.

Wickman's classification of the eight types of this disease, was a heroic and fairly successful effort to bring order into chaos. He did not tell us, however, that the cerebral form may produce every shade of idiocy, nor, that athetosis and athetoid movements were associated with this condition.

Infantile cerebral paralysis, following "acute infectious diseases as scarlet fever and measles," has a recognized place in our textbooks, but a fetal encephalitis with a resulting spastic paraplegia is barely noted as a sub-head. Wickman gives an account of a fatal case of epidemic poliomyelitis occurring in a young matron six months pregnant, which was diagnosed as eclampsia and delivery induced. Autopsy, however, demonstrated the typical lesions of the epidemic disease. It would seem, then, that this infection may be capable of invading the womb and producing morous in utero.

*Friedreichs' Ataxia.*—"Often attacking several children in the same family." May prove to be hereditary only in the sense with which to-day we explain how pulmonary tuberculosis appears and reappears in a family, from successive series of re-inoculations. This "hereditary disease" develops most frequently in childhood and at the age of puberty, or during the susceptible period for contracting an infection, if there was present an old case of poliomyelitis acting as a carrier.

*What is Paralysis Agitans?* A tremor of the extremities in the aged following "the exhaustion of an acute disease," and succeeded by rigidity, contractures, and atrophy. What would result from the shock of an infection of the cerebrospinal axis, not sufficiently grave to paralyze or kill? Would it not have a tendency to precipitate and exaggerate those symptoms of senility, tremor, ataxia, and incoordination, in men or women well past life's meridian? And does it not leave ample proof of its antecedent

cause in the muscular weakness, rigidity, contractures, and atrophy?

*Acute Transverse Myelitis.*—"Ushered in by fever, headache, delirium,—abruptly with a convulsion,—by rheumatoid pains,—retention of urine (a very important and early symptom), and a possible spastic paraplegia, form so clear a group picture of the onset and progress of a case of poliomyelitis with lumbar involvement only, that a differential diagnosis is hardly in order.

*Disseminated Myelitis and Central Myelitis*, refer to the same lesion acting at different and higher levels of the cord. Landry's or the acute ascending paralysis of the text-books, is now known to be a mere variation in the mode of attack of poliomyelitis epidemica acuta.

The members of the following group which have not been proved to be identical with poliomyelitis, are under suspicion:

- Polioencephalitis superior acuta
- Polioencephalitis inferior acuta
- Fetal encephalitis

Acute infantile hemiplegia, secondary to scarlet fever and measles (infantile cerebral paralysis).

- Bell's palsy.
- Paralysis agitans.
- Friedreich's ataxia.
- Landry's ascending paralysis.
- Acute transverse, disseminated or central myelitis.
- Acute multiple neuritis.

*Diseases Presenting Paralytic Conditions:*

- Diphtheritic paralysis—diphtheria.
- Syphilitic pseudo-paralysis.
- Tuberculous spondylitis with paralysis.
- Obstetrical paralysis.
- Hysterical paralysis.
- Pseudo-paralysis of scurvy.
- Occupation neurosis.
- Progressive muscular atrophy.

*Diphtheria, and Diphtheritic Paralysis.*—The onset of acute

epidemic paralysis is sometimes announced by a pharyngeal angina of so severe a degree that a diagnosis of diphtheria has been made.

Lillian B., Eau Claire, Wis., 10 years old, September, 1908 (during epidemic); membranous sore throat. Antitoxin given. At the end of one week of fever, delirium, prostration, right arm became paralyzed, then left; paralysis gradually extending to muscles of respiration, patient died on the 12th day of illness. Diagnosis changed to infantile paralysis on appearance of characteristic paralysis.

Diphtheria.—Enlarged cervical glands, absence of knee jerk, slower pulse at onset (100-120), membrane attached, of appreciable thickness, Klebs-Loeffler bacillus. Paralysis post-diphtheritic, manifested by nasal intonation, regurgitation of liquids through nose, and incoordinate movements, which appear late.

Epidemic paralysis.—No enlargement of cervical glands; exaggerated knee jerk; rapid pulse at onset (120 to 200), patches on throat isolated and superficial; paralysis usually of extremities first.

*Syphilitic Pseudo-Paralysis.*—Absence of knee jerk is characteristic of locomotor ataxia, and appears before the incoordination of gait; there is also a preceding history of venereal infection, and gradual onset.

Epidemic Paralysis.—The knee jerk is exaggerated during onset of disease. Confusion may arise, when an adult male with an admitted venereal infection, dates a slowly progressive ataxia, incoordination, and mental bewilderment, from a certain "spell" of two days' illness occurring when acute paralysis was epidemic in community.

Luetic pseudo-paralysis of infancy is due to an acute epiphysitis, and will be associated with characteristic skin lesions, etc., which will yield to mercurial treatment, and confirm diagnosis.

*Tuberculous Spondylitis with Paralysis.*—The gradual onset of the condition, and the vertebral knuckle are characteristics of tuberculous disease of the spine which has advanced to the stage of pressure paralysis. Paralysis may be transitory when collateral pressure edema is relieved.

*Obstetrical Paralysis.*—"Obstetrical paralyses are limited to traumatized nerve trunks, and are found usually in the parts likely

to be handled with violence by the obstetrician—namely, the shoulders and arms.” (Hummel.)

These cases when brought to the specialist usually give a clear history of birth palsy; following difficult labor. If the labor was not protracted nor otherwise difficult, it would be well to keep in mind the possibility of an intra-uterine poliomyelitis or encephalitis.

*Hysterical Paralysis.*—Poliomyelitis in its chronic form may be simulated by an hysteria, “but the symptoms in purely functional cases do not group themselves usually in a manner typical of infantile paralysis.” Hysterical deformity or contracture can be temporarily overcome by anesthetizing the case.

*Pseudo-Paralysis of Scurvy.*—This condition is, happily, extremely rare in the Northern States and usually institutional. According to Fenner, of New Orleans, this condition is not a rare disease among artificially fed children of the well to do in the South, and “paralysis is another common mistake in diagnosis.” The differential diagnosis would relate to the hemorrhagic and spongy gums, hemorrhages into the orbit, hematemesis, bloody urine, and the immediate response to antiscorbutic diet: fruit juices, oranges, lemon, pineapple and fresh food.

*Progressive Muscular Atrophy.*—May be differentiated from acute epidemic paralysis by its insidious onset, and the location of the characteristic early atrophy in the thenar and hypo-thenar eminences.

*Acute Infectious Diseases Without Paralysis:*

Enteritis.

Typhoid.

Rheumatism.

Tonsillitis.

Influenza—Summer grippe.

Pneumonia.

Pleurisy.

Measles.

German measles.

Scarlet fever.

Chicken pox.

Tetanus.

Rabies.

*Summer Diarrhea—Enteritis, Cholera Morbus.*—The following table, compiled by Dr. H. W. Hill, Epidemiologist, Minnesota State Board of Health, which he denominates an "interesting analogy by contrast," is given in the belief that nothing could more clearly demonstrate the lack of relationship between infantile enteritis and epidemic paralysis.

	<i>Summer Diarrhea</i>	<i>Anterior Poliomyelitis</i>
Weather	Hot, damp	Hot, dry
Onset	Slow	Abrupt
Age	Under two years	Over two years
Feeding	Overfeeding	Underfeeding
Bowels	Diarrhea	Constipation
Previous health	Poor	Good
Incidence	Slum dwellers	Rural dwellers
Elimination	Marked	Retention
Dietetic errors	Continuous	Accidental or absent (except deficiency)
Intestinal incidence	Marked	Slight
Nervous incidence	Slight	Marked
Relation to milk	Obvious	None

The following death certificates are taken from the records of Eau Claire, Wis., during the period poliomyelitis was epidemic there, July, August and September, 1908. In each case there was one or more cases of clearly marked paralysis in house or immediate neighborhood.

#### CAUSE OF DEATH

July 7th, Male, 1 year, 4 mos.,	"Convulsions due to enteritis."
July 24th, Female, 7 years,	"Congestion of brain."
Aug. 16th, Male, 9 years,	"Paralysis of heart."
Aug. 28th, Male, 18 mos.,	"Acute indigestion."
Sept. 5th, Male, 4 years,	"Enterocolitis, congestion of brain."

It seems probable that in other communities a certain percentage of deaths due to poliomyelitis are thus credited. Vomiting and prostration are the only symptoms common to both. The seasonal occurrence is identical, but this probably indicates only that the transmission of the two diseases is dependent on a common carrier, the septic

house fly. This theory was carefully worked out *a priori*, by Dr. J. G. R. Manwaring, of Flint, Mich., before the laboratory experiments were undertaken, which proved the septic house fly to be at least one of such carriers.

## DIFFERENTIAL DIAGNOSIS

	TYPHOID FEVER	POLIOMYELITIS
Onset	Insidious	Acute
Season	Fall	Summer
Fever	Continuous	Early fall by crisis
Rash	Rose spots on abdomen	Scarlatiform, blotchy, or petechial and pustular over trunk and extremities
Bowels	Diarrhea, pea-soup stool	Constipation
Appetite	Anorexia	Hungry when temperature lowers, 3-4 day
Pulse	Slow pulse characteristic	Much augmented, 100 to 200
Blood	Widal reaction	Widal negative
Paralysis	None	Characteristic
Spasticity	Not present	Cervical or entire spine

The early symptoms which might lead to a tentative diagnosis of typhoid fever in a case of poliomyelitis, are the epistaxis, the extreme prostration, temperature, delirium, tremor, twitching and severe continued headache, and meteorism.

A rapid pulse, nuchal rigidity, and constipation would speak almost certainly for poliomyelitis. Season and presence of epidemic in community should be considered.

*Paratyphoid*.—The mode of onset alone would indicate diagnosis.

*Rheumatism, acute, articular and muscular*.—In the carefully investigated symptomatology of nineteen cases of poliomyelitis, Dr. Shidler reports (Nebraska State Medical Association) that all but one case suffered from general tenderness. This agonizing tenderness, taken with the fever and prostration probably accounts for the mistaken diagnoses of rheumatism. In rheumatism there is often a history of previous attacks, which salicylates have relieved; there



is swelling and redness of the joints, and the pain in the joints is severe in the early stage. In poliomyelitis the pain corresponds more nearly to the distribution of great nerve trunks, and increases after the fever begins to decline. There is not usually any swelling of the joints in poliomyelitis, yet this has been noted by a few observers.

The affected limb in poliomyelitis is cold to the touch, and distinctly cyanosed, assuming a dull reddish, purple hue.

*Muscular Rheumatism.*—A localized myalgia, such as torticollis, pleurodynia or lumbago, usually appears as a spontaneous symptom or condition unrelated to an attendant or subsequent train of illness. In torticollis the head will be inclined toward the affected sterno-cleido-mastoid muscle, and the spasm will disappear with catharsis and the application of heat. It would be well to investigate cases of self-diagnosed lumbago occurring in a family or community where acute paralysis is epidemic.

*Tonsillitis.*—Cases have been diagnosed as tonsillitis due to swelling and inflammation of the tonsils, which, in an exceptional case was reported extreme. If the mucous membrane of nose and throat form the point of attack for the virus, it is not strange that the tonsils sometimes react markedly; this is the exception and not the rule.

A true tonsillitis will usually give a history of susceptibility and repeated attacks, with allied rheumatic conditions. The meningism that accompanies a severe attack of tonsillitis will be confusing. This meningism usually clears promptly on the exhibition of calomel.

	TONSILLITIS	POLIOMYELITIS
History	Repeated attacks	None
	Rheumatic attacks	None
Onset	Chill	Rare
Tremor	None	Usual
Rash	None	Usual

*Influenza—Summer Grippe.*—Influenza, grippe, and the balance of the respiratory diseases reach their period of maximum incidence in February and March. When they appear during the summer they usually follow a period of damp and cold weather and are more apt to affect adults. The coryzal onset of influenza is rarely

seen in poliomyelitis. Dr. C. A. Anderson, of Stromsberg, Nebraska, reports "complete absence of acute catarrhal trouble in the respiratory tract and eyes," in an analysis of two hundred and seventy-nine cases in the Polk Co. epidemic.

The tremor, spastic spine, and spasmodic tossing of extremities in sleep, in the one disease is much more marked than the vague meningism which may accompany the onset of a hard cold.

*Pneumonia, Broncho-Pneumonia.*—Rapid and shallow respirations, together with the abrupt onset, high temperature and racing pulse, suggest an impending broncho-pneumonia when the child is first seen. There is sometimes an accompanying bronchitis, but this is rare. Physical examination will show the lungs are clear. These cases are usually of the acute ascending type of paralysis with a beginning involvement of the muscles of respiration.

*Measles, German Measles, Scarlet Fever, Chicken Pox.*—Skin rashes, which follow the fastigium of poliomyelitis may simulate the eruption of any one of the acute exanthemata. A scarlatinal blush, a fine petechial rash, measly blotches, and a papular and vesicular eruption have all been observed. The measly rash with blotches somewhat smaller than in measles is most common, and has doubtless been efficient in scattering the infection of poliomyelitis far and wide. Many mothers are convinced that it is better for children to "take" measles when they are young, and are not averse to allowing them to play with supposed cases of measles. In German communities there are always gute Hausfrauen who are considered sufficiently accurate diagnosticians for such trifling ailments.

Measles will have a history of an acute coryza with watering eyes, cough, diarrhea (usually), in fact an acute catarrhal inflammation of the mucous membranes of digestive and respiratory tracts. While in poliomyelitis in an early stage the eliminations are nil. In severe cases of measles, especially in adults, there is a pronounced meningism at onset followed by an apathetic typhoid condition. The meningitis of poliomyelitis is of a much more pronounced type; the spastic spine, augmented reflexes, basilar headache, will serve to differentiate the two diseases; a history of the epidemic appearance of one or both in the community must be considered.

The rash of measles usually appears on the face at the edge of the hair and back of the ears. The rash of poliomyelitis on trunk and extremities.

*German Measles.*—The eruption of German measles also appears usually on the face and below hairline. There is an accompanying coryza, and enlargement of cervical and occipital glands, which will serve to differentiate it from poliomyelitis.

*Scarlet Fever.*—There is little danger of confusing a typical case of scarlet fever, for the brilliant scarlet blush appears early, usually at the lapse of twelve hours. The rash of poliomyelitis, which may assume the scarlatinal type, appears late, as the fever is declining.

*Chicken Pox.*—The diagnosis in the following cases was carefully reconsidered on the appearance of a pustular rash. The cases occurred during the apogee of the epidemic of 1908 in Eau Claire, Wis., and were seen in consultation. B. and W., brothers, aged 2 and 7 years, taken sick, 48 hours apart; marked prostration, twitching, abolished reflexes, inability to raise head, moderate fever (102), rapid, running, feeble pulse, entirely conscious. Paralysis of respiration terminated both cases the succeeding Sunday afternoon, the third and fifth day after attack. The baby dying at three P. M. and the older boy at seven P. M. The pustular rash appeared all over torso and extremities of babe. The environment was most unsanitary.

*Tetanus.*—A poliomyelitis of Landry's descending type might closely simulate an attack of lockjaw, and the history of a recent slight trauma would tend to confuse the diagnosis.

S. M., of Wisconsin, 14 years of age, was present in a group of other boys on the morning of the 4th of July, when a toy cannon exploded. He was struck by one of the flying particles and sustained a slight laceration. Late in the month he became ill with convulsions, and a diagnosis of tetanus was made by the attending physician. Antitetanic serum was telegraphed for, but paralysis of all extremities followed before it could be used. This was not a fatal case. When last seen, a year subsequent to the attack, he was a helpless paralytic, with general atrophy of muscles.

The history of a trauma, in a case of convulsions with spastic condition of the facial muscles, is not to-day presumptive evidence of the presence of tetanus. In a large percentage of cases of frank poliomyelitis there is a clear history of a trauma, frequently accompanied by a solution of continuity. The trauma is most frequently due to a stumble, slip or fall, the result of the incoordination which

accompanies the onset of this disorder of the cerebrospinal axis.

An adult male, 38 years of age, while making stump speeches through a country district where poliomyelitis was epidemic, ran to catch a trolley car, stumbled, fell, and scratched his knee. He was taken ill the following day, treated for lock-jaw and promptly died. The sequence of onset of the acute disease, incoordination, fall, and trauma, are indubitably more probable, than that tetanus followed so promptly on a slight open wound, and was utterly unresponsive to antitetanic serum, which was administered.

Cases of poliomyelitis occurring within a few weeks of the 4th of July, have been mistakenly attributed to lock-jaw resulting from some quite harmless burn from fire or cannon cracker. Every such case, improperly diagnosed, remains a menace to the community unprotected from contagion.

	TETANUS	POLIOMYELITIS
Trauma	Injury not recent; presence of visible wound	History of trauma probable, and recent
Onset	7 to 14 days after injury	Onset co-incidental with trauma or within 48 hours
Course	Early involvement of masseter	Masseter muscle rarely involved
Headache	No headache	Basilar headache intense
Inferior maxilla	Lower jaw fixed and im-movable	Patient can depress lower maxilla to sternum though cervical rigidity is marked

*Rabies.*—Most children, if not allowed a pet of their own, have established friendly relations with the dog or cat belonging to a neighbor. Much rough and amiable frolicking results, and any observer may assure himself that it is not often the child who is the victim of this rough and tumble sport. A cat dragged about by its tail will scratch now and then, while a dog will leave the marks of his teeth as a proof of the affection for his young master. An acute and fatal illness, characterized by convulsive seizures with a history of having been scratched or bitten by some household pet, is not necessarily rabies.

On the other hand, there has been an astonishing increase in the newspaper reports of deaths from hydrophobia, since poliomyelitis became pandemic in North America. It may be that the curious and unexplained analogy of these two diseases will not always remain obscure. The physician to-day should be able to definitely eliminate the possibility of the presence of acute epidemic paralysis before making a diagnosis of rabies.

	RABIES	POLIOMYELITIS
History	Bite or laceration, from rabid dog, cat, fox, wolf, or skunk	None, or scratch or playful bite from household animal with unimpaired health
Incidence	Incubation from 40 to 60 days	
Premonitory symptoms	Itching or burning of wound, with renewed inflammation	Wound healed and invisible
Onset	Pharyngeal spasm, salivation	No pharyngeal spasm, no salivation
Dysphagia	Due to pharyngeal spasm, intractable	Difficult swallowing due to cervical rigidity and pain. Overcome by use of drinking cup; tonic; unrelaxing
Spasticity	Paroxysmal Dentition Autointoxication Ptomaine poisoning Eclampsia Trichiniasis Tuberculosis of joints Rachitis	Tonic and unrelaxing

*Dentition.*—The error of an assumed relationship between acute epidemic paralysis, and the period of dentition, apparently dates back to the report of Dr. George Colmer of cases occurring in West Feliciana, La., in the summer of 1841. In this first report of the disease in its epidemic form, Dr. Colmer states that twelve cases were

all teething children under two years of age. Two errors seem to have taken their origin from this otherwise illuminating report: first that this epidemic malady was one of infants only, and second, that it related to the period of dentition.

Dentition is included in the differential diagnosis for the reason that among the laity, and also some of the profession, it has been loosely stated that infantile paralysis was a *complication of teething*, whose results may be and usually are outgrown. A Manhattan father was so informed when his eighteen months old daughter developed a complete paraplegia.

The eruption of the teeth in childhood is usually marked by hypersecretion of the saliva, with drueiling, and an enterocolitis with diarrhea. The lowering of the child's resistance would make it more susceptible to exposure from any infection, and therein lies all relationship between teething infants and acute epidemic paralysis. The onset of poliomyelitis is usually accompanied by an obstinate constipation.

*Autointoxication.*—Intestinal intoxication with retarded elimination and meningism may simulate the onset of poliomyelitis. Elevated temperature, increased pulse rate, basilar headache, vomiting, vertigo, and even a mild delirium or confusion may be all present. The immediate relief given by a thorough flushing of the bowels will serve to differentiate the condition from the disease.

*Ptomaine Poisoning.*—The furious onset which usually accompanies an attack of poliomyelitis in the adult, may easily be mistaken for a case of ptomaine poisoning from the ingestion of decomposed food. A rapid irregular and feeble pulse, projectile vomiting, meteorism, and symptoms of basilar irritation, or stupor, are common to both conditions. In ptomaine poisoning the history will be of an indiscreet diet, of the partaking of some one article of food after which the patient immediately felt unwell, or of some article for which he has always had an individual susceptibility. There may be a history of the simultaneous illness of several members of the same party which had eaten of the dish, which would clinch the diagnosis. Lavage of the stomach, calomel and a colonic flushing will relieve the vomiting, and the other symptoms will gradually modify, in a case of ptomaine intoxication.

The sudden, forcible, repeated vomiting of poliomyelitis when

present, being central in origin, will not yield to stomach lavage, nor will the symptoms of basilar irritation modify immediately under this treatment. There have been undoubted cases during the epidemic disease, which were supposed to be due to intestinal irritation, with an extremely severe onset, which cleared up under the treatment outlined, with no remaining paralytic complication, where the true cause of the attack would have been unknown and unsuspected, had not another member of the household subsequently sickened with a typical case of poliomyelitis.

POLIOMYELITIS	PTOMAIN POISONING
Epidemic in community	No epidemic
History of exposure	Not exposed
No dietary indiscretion	Dietary indiscretion: (a) over-feeding; (b) decomposed; (c) shell fish; (d) personal idiosyncrasy
Vomiting sudden, forcible, repeated, not modified by treatment	Vomiting distinctly modified by treatment
Symptoms of meningitis	Meningism only
Paralysis	No paralysis

*Eclampsia.*—The onset of poliomyelitis in the pregnant woman closely simulates an uremic attack. The following valuable account of a case, cited by Wickman, and abstracted by Frost, is given in preference to others known, as the autopsy findings proved the presence of the acute infection.

H. K., female, age 27 years, married, taken sick suddenly Aug. 19th, 1905, with fever, headache, pains in back; next day vomited so suddenly as to dislocate the jaw; tenderness and stiffness of neck increasing until head was moderately retracted; violent tonic contraction of the shoulder muscle, throwing the arms up to the head; tonic contractions, flexing elbows, flexing fingers and adducting thumb; no ocular paralysis; cramps so painful as to require chloroform; evening temperature 99.6 deg. F. Patient fully conscious; opisthotonus. August 21st: temperature 101.8 deg. F., patient being six months pregnant, eclampsia was suspected, and forced delivery was undertaken successfully; cramps continued, extending to legs; inability to swallow and difficulty of speech developed later

the same day; condition continued until death at six A. M. August 22nd. Patient conscious throughout. An autopsy was performed, revealing typical histologic lesions of acute poliomyelitis. The cerebrospinal fluid was found greatly increased in quantity and quite clear.

Here again poliomyelitis has shown its protean character, by closely simulating a condition and disease to which it is unrelated. The points of differentiation in a case of uremic convulsions would be the albumin loaded urine, possibly diarrhea, sudden amaurosis, and uremic coma. The dyspnea and cyanosis are also much more severe in uremic convulsions, and there may be a history of Bright's disease of the kidney.

*Trichiniasis.*—Trichiniasis during the period of onset is not so apt to be confused with poliomyelitis as it is at the time, ten days later, of the liberation of the embryos in the invaded muscles.

A polymyositis is established; the muscles become intensely painful, swollen, and hyperesthetic; an involvement of the diaphragm, which is usual, causes painful and impeded respiration; taken with the history of the attack a few days away, of pain, vomiting and fever, and a picture is left on the mental retina which may be closely simulated by the onset of poliomyelitis.

A clear history of eating uncooked pork or sausage must be obtained before the diagnosis could be made. By Herrick's method the trichinella spiralis may be recovered from the circulating blood.

*Tuberculosis of Joints with Fixation from Pain.*—Prof. Eccles, of the medical department of Marquette University, was called in consultation to see a boy of ten years, with a supposed tuberculosis of hip joint immobilized by pain. He found a fourth week case of poliomyelitis, with a clear history of acute onset, occurring while the disease was an epidemic in the State of Wisconsin.

It would seem that the characteristic insidious approach of tuberculosis, with fever, apathy, and wasting, would be in such marked contrast to the acute onset, sudden paralysis, and rapid atrophy of poliomyelitis, that a mistake in diagnosis could not occur.

The affected joint in tuberculosis, in addition to the pain and tenderness, is swollen and perceptibly changed in outline from its fellow. The immobility is that of fixation from pain and is not a



paralysis or paresis. The family history is usually suspicious, complicated with deaths from pneumonia or consumption.

The paralytic limb in poliomyelitis is undergoing regeneration, a regression of the paralysis, or rapid atrophy. The affected muscles show the reaction of degeneration, and the entire history is one of an acute disease.

*Rachitis*.—The characteristic rachitic rosary, the bilateral asymmetry of the paretic legs, and the negative electrical reactions will serve to distinguish a case of rickets from the suspicion of the acute infection.

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## DYSPEPSIA

By ROBERT T. MORRIS

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Dyspepsia is a symptom. It is like a cough, for instance, or like a case of diabetes mellitus in this respect. Whenever a patient has a cough or diabetes mellitus or dyspepsia it means that we are to make a diagnosis of something which is causing the symptoms in all of these cases. The internist sees many cases of dyspepsia which are dependent upon purely medical conditions, like arteriosclerosis, valvular heart disease or interstitial nephritis.

He sees also a large number of cases of dyspepsia which are partly or wholly surgical, in proper classification.

The cases of dyspepsia which get to the surgeon because of the growing importance of symptoms, usually give a history of medical treatment which has extended over years, and which took no account at any time of the real cause for the symptom known as dyspepsia.

The effect of medical treatment of surgical dyspepsia is largely the effect of suggestion administered to the patient by the doctor, whose suggestion is powerful when he gives drugs with confidence; a confidence based upon his own deception. For this reason a homeopathist, giving little pills which contain really nothing at all, may have a larger clientele of fairly contented patients than the regular physician who studiously arranges a system of drug treat-

ment, with drugs which he can describe in detail from the scientific name of the plant to the geological order of the mineral, even though he cannot hold up his right hand and state how much of the active principle of any plant actually enters into any prescription, or what immediate changes will take place in minerals subjected to body chemistry.

The effect of suggestion administered to the patient by his physician extends also to the dietary list, as we observe in the way of an object lesson when the patient, who has improved for a time under one doctor's régime until he becomes weary, improves quite as much on the next doctor's régime, which is wholly conflicting with the dietary plan of doctor number one.

When the patient with dyspepsia gets to the surgeon there is commonly a closer diagnosis made, because the case has arrived at a point where serious action is involved, and the surgeon likes to be pretty accurate in his diagnosis before subjecting a patient to operative procedure.

The cases of dyspepsia which get to the surgeon group themselves under comparatively few heads, and yet these comprehend a rather large part of all dyspepsias.

How does the surgeon go about making a diagnosis?

First he obtains an opinion from a competent medical diagnostician, relating to the purely medical features of the case. Next he takes in order certain well known causes for the symptom dyspepsia.

If there is a question relating to the origin of dyspepsia from the appendix, he presses over the group of right lumbar ganglia about one and one-half inches to the right of the navel, close to the spinal column. If this group of lumbar ganglia is hypersensitive, and the left group of lumbar ganglia is not hypersensitive he has presumptive evidence that the appendix is a disturbing factor in the case.

The next step consists in determining whether the peripheral irritation at the appendix is due to fibroid degeneration of the appendix irritating the terminal filaments of the sympathetic nerves engaged in hyperplastic connective tissue, if it is due to adhesions resulting from some attack of infective appendicitis, or if it is due to the presence of concretions or other contents in the lumen of the appendix. This point is determined largely by the subjective

history as related by the patient, but we have primarily the evidence afforded by hypersensitiveness of the right group of lumbar ganglia as a guide in diagnosis.

Appendicitis in its various chronic forms seems to be associated with dyspepsia in two chief ways—as an active factor, and as a coincidental occurrence. As an active factor chronic appendicitis in its several forms disturbs the sympathetic ganglia controlling the production of chromaffin secretions. This in turn may lead to pylorospasm or to the secretion of morbid hormones. It may lead to disturbance of the sensory nerves with production of gastralgia.

Dyspepsia associated with chronic appendicitis of infective origin may mean that appendix and stomach are simultaneously involved in a toxic process due to a still more remote cause. Under such circumstances removal of the appendix may not have any effect in relieving a dyspepsia, for the condition of the appendix is merely coincidental in that case with the condition of the stomach.

We have then two distinct classes of cases into which the appendix question enters—one in which the condition of the appendix is directly and definitely responsible for the dyspepsia, and the other in which a morbid condition of the appendix is present at the same time with stomach disturbance, without standing in causal relation. It is what Dr. Draper used to call “a concomitant epiphenomenon.”

How are we to make the diagnosis if dyspepsia is caused by eyestrain?

First we are to note the external facial evidence of eyestrain as described by Stevens, and no one can properly begin treatment of any sort of dyspepsia unless he is familiar with the work of this author. Sometimes the subjective history of a patient may lead us to suspect the presence of eyestrain in cases in which external facial expressions do not lead the observer toward that question.

In all cases in which dyspepsia is suspected to be caused by eyestrain the patient is to be referred to some oculist who is known to have given attention to this subject, and who is not too busy to know if his trial lenses are accurate, and who does not disappoint the surgeon with a report upon the patient's “sight,” which has nothing to do with the subject.

How are we to know if dyspepsia is due to the presence of

adhesions of the pyloric and bile tract regions—"cobwebs in the attic of the abdomen?"

Here we have a very definite resource. The patient is sent to an expert who fills his stomach with a bismuth mixture, and then with the fluoroscope determines the point of interference with gastric motility, pyloric fixation or a change in the normal rhythm of stomach diastole and systole. Evidence obtained in this way serves to guide the surgeon who believes that any given case of dyspepsia may be due to cobwebs of the attic of the abdomen—to-day we depend upon the fluoroscope for dyspepsia diagnosis quite as much as in broken bone diagnosis.

Gall-stones which may or may not have made demonstration on their own account are responsible for very many cases of dyspepsia; but it is a mistake to attempt to carry the diagnosis to the refinement of determining whether gall-stones are present or not. Gall-stones are incidental to a toxic process, which at the same time may develop adhesions in the vicinity, or which may form adhesions quite independently of any gall-stone formation. Most of the symptoms of gall-stones may be simulated by the presence of adhesions, and as both appear to be of the same origin it matters little whether or not we find gall-stones at the operation. It is very much like the matter of finding concretions in an appendix at the time of operation. Their presence or absence has no real bearing of consequence, because the biggest thing in either region is the bacterium.

How are we to know if dyspepsia is caused by an ulcer of the pylorus or duodenum?

Persistent recurrence of hyperacidity in spite of good medical treatment, in cases in which we can prove that common causes for hyperacidity are absent, is sufficient ground for at least assuming that we have ulcer of the pylorus or duodenum. If in addition we can have testimony relating to interference with gastric motility, as brought out by the fluoroscope and bismuth, or the classical features of pain and hemorrhage described by the textbooks, we may arrive at a pretty accurate diagnosis.

Einhorn's thread allowed to remain in contact with the pylorus and duodenum for a sufficient length of time gives us another valuable diagnostic resource if it is properly used, but the most

important single diagnostic point for ulcer of the pylorus or duodenum is persistent hyperacidity in the absence of other discovered causes for dyspepsia in any given case.

How are we to know if dyspepsia is of so-called neurotic origin?

By examining the patient for stigmata of decadence—the high-arched palate, gun stock scapulæ, facial asymmetry, and the various stigmata which indicate that the patient belongs to a family which is passing the stage of highest normal development.

In the group of decadents, which includes many geniuses, we find a great deal of dyspepsia due to morbid action of various secreting glands. This group of patients also includes many of those with relaxed peritoneal supports, who suffer from the secondary effects of various ptoses of abdominal viscera.

The surgeon accomplishes little with his resources in these cases, although the patient responds for a time to the suggestion that goes with an operation, quite as well as he responds to Christian Science doctrines, or to medical treatment on the part of a physician who impresses the patient sufficiently with his personality.

How are we to know if dyspepsia is caused by the presence of a loose kidney, not associated with other visceral ptoses?

By keeping the kidney approximately in its position in Gerota's pocket by the use of general abdominal supporters. The abdominal supporter will restrict the range of a loose kidney sufficiently to lessen the dyspeptic symptoms, and we can then resort to surgery if we wish, after making the diagnostic point gained through temporary support of the kidney.

I have enumerated the most common causes for dyspepsia in the patients who appear at the office of the surgeon. A number of other causes less common, like nasal hypertrophies, or sensitive scars of the uterine cervix, appear less frequently as causative factors, but must always be kept in mind by the diagnostician. The term "causative factor" in this connection is used guardedly, because most dyspepsias, gastric or intestinal, seem to be toxic on last analysis, indicating that nature has a plan, not observed by Malthus or Darwin, of limiting the development of races of animals just as it limits the development of races of trees, by disposing of them through poison after certain stages of development have been attained.

## RADIOGRAPHY OF THE GENITOURINARY TRACT

By GEORGE M. MACKEE

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That radiography plays an important rôle in the diagnosis of certain pathological conditions of the genitourinary tract is now well recognized and is attested by the frequent consultations between the Röntgenologist and the genitourinary surgeon. Although there will be a further advance in this field, the important improvements of the past few years in apparatus, technic and interpretation have allowed results that are eminently satisfactory.

With proper technic it is possible to dispense with the blend and small diaphragm and to obtain the entire genitourinary tract on one or two plates. If compression is required, an inflated rubber ball will usually answer the purpose admirably. It is possible, also, to produce shadows of the kidneys in a majority of the cases.

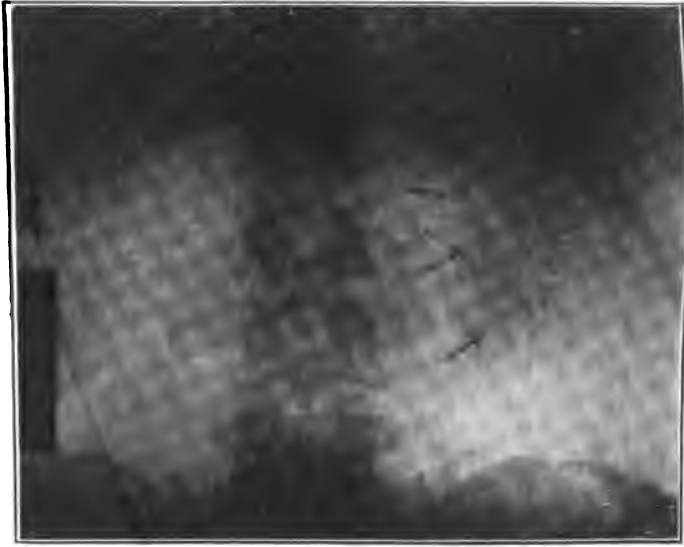
Calculi, when composed of material that is impervious to the X-ray, and when too large to be spontaneously voided, may be clearly demonstrated. Stones constructed of pure uric acid or its salts are practically pervious to the ray and as a rule cannot be shown even when of large dimensions or upon the best of plates. Fortunately, such calculi are uncommon, especially in the kidneys and ureters. It is worthy of comment that minute stones, too small to warrant surgical interference, and yet frequently causing the most severe and most typical colic, are the ones that appear to be most commonly overlooked. This is either because of their size, or because they have been passed by the time the radiographic examination is made. In the cases where the symptoms are indefinite, and where calculi are only suspected, it seems that they are most frequently depicted.

Fecal matter, intestinal gas, foreign bodies, or solid substances in the intestines, portions of clothing, calcified glands, etc., may

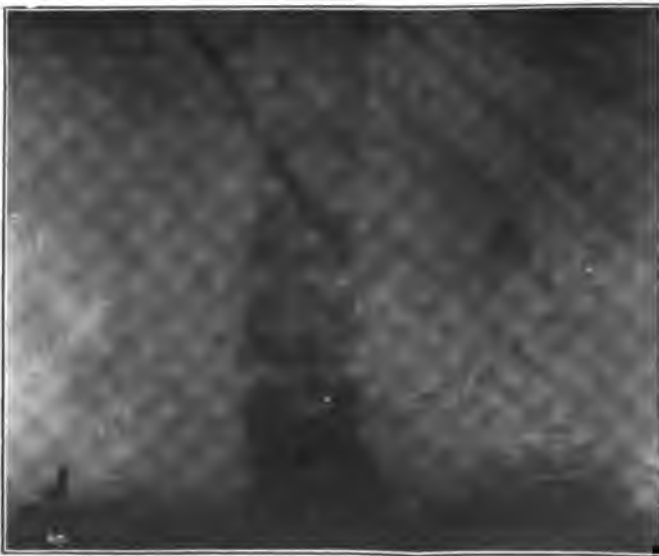
seriously interfere with the radiographic diagnosis of calculi. To overcome the handicap imposed by fecal matter, gas and foreign bodies in the intestines, it is advisable to prepare the patient by administering a mild laxative, such as castor-oil, over a period of two or three days before the examination, and to give an enema on the morning of the consultation. If there are any confusing shadows on the plates a confirmatory radiograph or a series of such plates must be made after the lapse of a day or two, during which time the daily evacuation of the intestines is assured by the administration of suitable measures. Calcified glands and other fixed concretions often closely simulate ureteral calculi. As a rule such bodies can be readily differentiated by their position and shape, but occasionally it is necessary to resort to the use of the stylet and even to employ stereoscopy in addition to the wired catheter before it is safe to hazard an opinion.

In the radiographic diagnosis of calculi of the genitourinary tract the first requisite is to obtain a series of the best radiographs that can be made in the individual case. The question as to whether the plates are or are not suitable for the purpose of diagnosis may be advantageously trusted to the conscientious and conservative Röntgenologist. He knows when his results are satisfactory and he will be unwilling to give his opinion until all possible radiographic information has been ascertained. He will then carefully study and interpret the plates and convey the findings to the surgeon. In other words, the opinion of the radiographer should be considered of more value than the apparent character of his radiographs. Not infrequently a surgeon who has had considerable experience in the interpretation of radiographs will be able to read the plates correctly and even to indicate features that had been overlooked by the Röntgenologist. For this reason it is advisable for the surgeon to study and discuss the plates with the radiographer. But it is my contention that no matter how experienced the surgeon may be, it is unsafe for him to interpret the plates without being guided by the radiographer. As an example, imagine a radiograph of the genitourinary tract, which, from a photographic standpoint, is excellent. If no calculus was visible, it might be assumed that, with the recognized exceptions, one was not there, when, as a matter of fact, if the exposure was not made during suspended respiration,

THE ARCHIVES OF DIAGNOSIS



One large Calculus in the Renal Pelvis, with small Concretions  
in the Calices



In this Instance Calculi were only suspected in One Kidney, while the  
Radiograph depicted large Stones in Both Organs

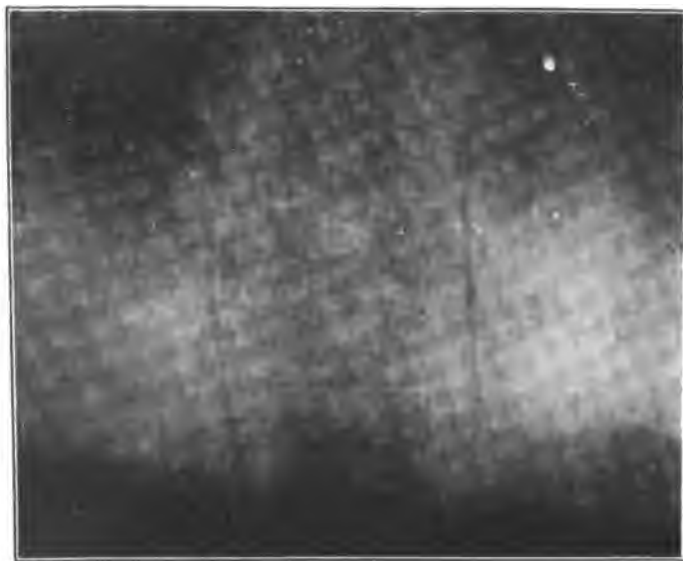
RADIOGRAPHY OF THE GENITOURINARY TRACT

George M. MacKee



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# THE ARCHIVES OF DIAGNOSIS



Radiograph taken after an Injection of Argyrol into both Renal Pelves.  
On the Right Side there is a "Plumb-Line" Ureter. The Left  
Ureter is curved, probably being due to Adhesions. At  
this point there are Shadows which could be  
mistaken for Ureteral Calculi



Calcified Glands simulating Ureteral Calculi. The Shadow represented  
by Arrow No. 1 was probably a Calculus, for three days after the  
Radiograph was taken the Patient passed a very small Stone

RADIOGRAPHY OF THE GENITOURINARY TRACT  
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the image of even a fairly large stone might be so blurred as to be unrecognized.

The entire genitourinary tract should be studied in every case. In this way a second unsuspected calculus will at times be detected. But more important is the fact that occasionally the symptoms will suggest the right kidney as the seat of trouble while the calculus will be located in the organ of the opposite side.

Lead letters, representing right and left, should be placed on the plate at the time of the exposure so that there can be no possible confusion regarding the side upon which the calculus is found. The plate should be numbered at the time of the operation and the number must correspond with that placed on the history card so as to preclude the possibility of mistaking a radiograph of one patient for that of another individual.

When excessive speed is attempted in radiography, it is always at the expense of some important feature. With some parts of the body, as, for instance, the lungs, heart or stomach, rapidity is essential, but extreme speed is not required in ordinary radiography of the genitourinary tract. The main point is to have the duration of the exposure short enough so that the operation can occur during suspended respiration.

By placing the tube in the usual lead-glass shield, and having the switches, interrupters, etc., behind a suitable leaded screen, it is probable that ample protection is afforded to both the operator and the patient. And with the rapid exposures now made, there is practically no danger to the directly exposed surface of the patient, as a result of a single series of radiographs. Not infrequently, however, a number of confirmatory plates are necessary, and then it must not be forgotten that individuals will often go to two or more radiographers within a short period of time. Bearing in mind the danger of repeated exposures, it is a good plan to always filter out the very soft rays by placing a piece of aluminum, chamois, leather, gold-foil, or other suitable material between the tube and the integument.

Tuberculosis of the kidney occasionally can be diagnosed by radiography, but more often, by demonstrating the size of the organ and by depicting calcified tubercles and by excluding calculi, the radiograph simply confirms the clinical diagnosis.

Tumors of the kidney, also, may be depicted. I have had cases in which large, ill-defined shadows have proved to be sarcomata, hydronephromata and, in one instance, a large abscess.

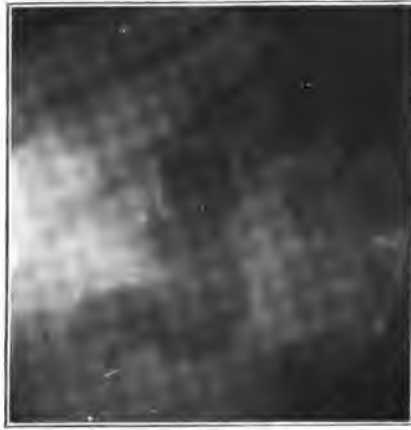
By injecting a 50 per cent. or stronger solution of argyrol into the renal pelvis, it is possible to determine the position of the kidney when a shadow of the organ cannot be obtained. I recall one instance, where an aged gentleman had a tumor in the mid-line of the abdomen just below the umbilicus. It was thought possible that this might be the kidney but it could not be proven by ureteral catheterization or by physical examination. A radiograph in conjunction with an injection of argyrol proved the mass to consist of the kidney with an enormous dilatation of the pelvis. In another instance, a large tumor in the lower part of the abdomen was supposed to be the kidney. The latter organ was shown to be in its normal position and there was no deviation in the course of the ureter. The operation proved the mass to be due to an unrecognized chronic appendicitis.

The argyrol method, in my hands, has proved more satisfactory than the stylet in demonstrating the true course of the ureter and in showing strictures and kinks. In most instances it will admirably answer the purpose of differentiating between shadows of concretions outside of the ureters from those within these tubes. It will also depict a dilatation of the renal pelvis and not infrequently will demonstrate the cause of the condition.

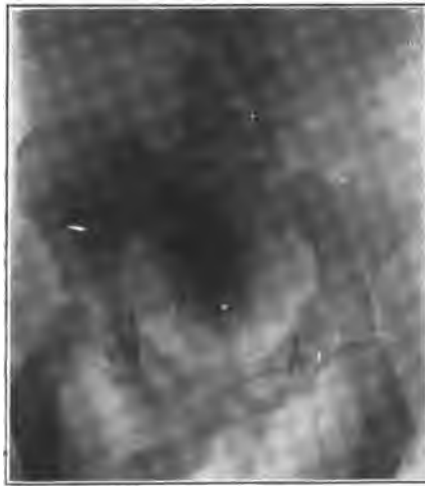
The special technic of the procedure is as follows: A preliminary radiograph is taken to exclude calculi. Then the patient is catheterized and from 8 to 30 cc. of a strong and freshly prepared argyrol solution is slowly injected. It is not necessary to have the catheter reach the kidney. The patient must be on the radiographic table and everything in readiness for a rapid exposure before the solution is introduced. Rapidity is advisable in these cases on account of the danger of colic and because there appears to be a peristaltic movement of the ureters, which has a tendency to blur the image. It is possible to procure good results with air, lime water, distilled water, collargol and other substances, but argyrol appears to be the best material for the purpose.

A satisfactory shadow of the bladder may be obtained by the use of weak solutions of argyrol. This will serve to demonstrate

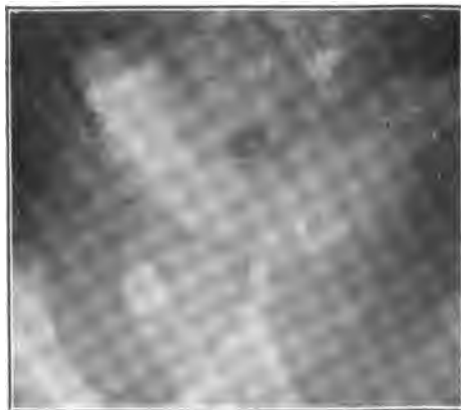
THE ARCHIVES OF DIAGNOSIS



Large Calculi in the Kidney.  
Radiograph taken with a Blend



Large Phosphatic Vesical Calculus in a Boy,  
Five Years of Age

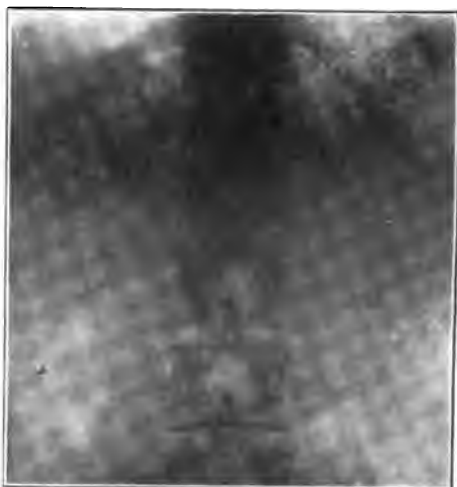


Small Phosphatic Calculus in Bladder.  
Unusually high Position

RADIOGRAPHY OF THE GENITOURINARY TRACT  
George M. MacKee



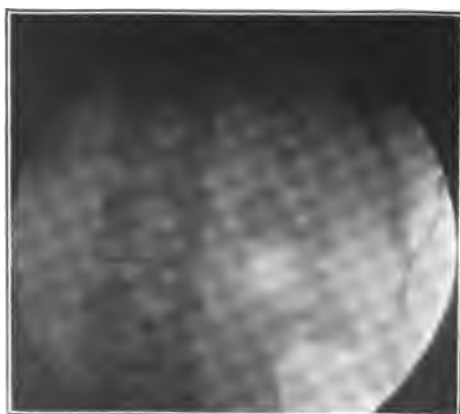




**Small Phosphatic Calculus in Renal Pelvis**



**Shadows of Calcified Glands and Fecal Matter  
proven not to be Ureteral Calculi by  
the Presence of Stylized Catheters**



**Large Calculi in the Renal Pelvis and Calices.  
Shadows of Gas and Fecal Matter also de-  
picted. Radiograph taken with a Blend**

**RADIOGRAPHY OF THE GENITOURINARY TRACT**  
George M. MacKee

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its size and its dilatability. At times the solution will find its way through dilated ureters to the kidneys. Caldwell has presented such a radiograph in which the bladder, ureters and renal pelves all contained the solution. In the near future, in connection with Dr. B. S. Barringer, I hope to be able to demonstrate the urethra as well as the bladder by this method. This may make it possible to diagnose a contracted neck of the bladder and to obtain useful information in cases of hypertrophic prostate and other pathological conditions of this portion of the genitourinary tract.

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## ANAPHYLAXIS

By JOSEPH H. BARACH

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### INTRODUCTION

In the light of our present knowledge of this new phase in medical science, anaphylaxis may be defined as a state of hypersusceptibility of the organism to specific alien proteid substances. It may be congenital or acquired, it may exist as an active or passive state, and is essentially protective in its intent. It manifests itself by local and general symptoms, sometimes very mild and at times fatal.

Anaphylaxis is a manifestation of allergie (Von Pirquet), the latter being an altered power of the organism to react. When this altered power of the organism to react is a temporary increase, we have active anaphylaxis. When the altered power to react is passive, we have a state of passive anaphylaxis or passive immunization.

### LABORATORY EXPERIMENT

In the laboratory, anaphylaxis is produced in the following manner:

Inject into a guinea pig (intra-peritoneally, intra-venously, intra-cerebrally, or subcutaneously), not less than one-twentieth of a millionth of a gram of properly prepared (thrice crystallized) egg albumen,<sup>1</sup> and after a lapse of seven to twelve days,<sup>2</sup> repeat the

injection; the animal experimented upon will show symptoms of anaphylaxis.

The symptoms are such as a refusal of food, restlessness, irritability, turning away from the light, scratching about the nose, spasmodic coughing, accelerated and irregular respiration, partial or complete paralysis and recovery.

If the first dose given, the sensitizing dose, has been as large as one millionth of a gram,<sup>3</sup> the guinea pig may die from the second injection.

The aforementioned doses are the minimum ones known to produce symptoms and death. The usual working dose for experimental purposes as is used by Anderson and Rosenau,<sup>4</sup> is 5 c.c. of serum intra-peritoneally. The smallest amounts to cause death, in their laboratories, has been intra-peritoneally 0.1 c.c., intra-cardially 0.01 c.c., and intra-cerebrally 0.25 c.c.

When the facts regarding anaphylactic death were related to Ehrlich, who visited America in 1904, he started Otto, an assistant, to working on the solution of this interesting problem.

They designated this occurrence as the Theobald Smith phenomenon. From that time to the present, a great deal of work has been done along this line and a wealth of experimental evidence is being amassed, so that to-day we know that many alien proteids, animal and vegetable, introduced into an animal, create a state of hypersusceptibility, which at a second injection after a proper lapse of time brings on anaphylaxis.

The toxicity of the various proteids and the susceptibility of different animals vary widely.

Some of the better known substances that have been used experimentally, are: egg albumen, horse serum, eel serum, pleuritic effusion, vaccine virus, milk, mussels, papain, tentacles of actinia, tuberculin, typhoid vaccine, etc.

Up to the present, there is as yet no definite agreement upon the *modus operandi* of the anaphylactic phenomenon; but as accumulating facts are shaping themselves, they tend toward the direction of protein cleavage.

For a clearer conception of the problem involved, it will be well to recall certain biological and physiological facts which have a direct bearing on the question.

## PHYSIOLOGICAL AND BIOLOGICAL FACTS

A well known biological fact is the direct relation of the precipitin reaction to animal species.

The investigations of Von Pirquet,<sup>5</sup> Wells,<sup>6</sup> and Schryver,<sup>7</sup> show that there exists a distinct parallelism between the precipitin reaction and anaphylaxis.

To quote Von Pirquet, "the power of a given serum to produce anaphylactic symptoms corresponds absolutely with the intensity of the precipitin reaction."

With these facts as a starting point, Eccles<sup>8</sup> in a theoretical consideration of this subject adduces many experimental evidences and interprets a theory of anaphylaxis in the light of organic evolution. He quotes Darwin, "Natural selection will never produce in a being anything injurious to itself."

This principle is here ratified when we note that the injurious substances are alien proteids.

We may argue, then, that natural selection intended the protein of one animal species to be dangerous to another as a protection against its foes. Under such circumstances the consumers of proteids had to develop protective devices against the poisonous effects of alien proteids or die.

Thus from the unicellular phagocytic manner of ingestion and digestion of food substances to the next stage in which a surface sulcus is developed and then the gastrula, the intestinal wall, secreting glands within the wall, specialization of glands for different functions, and from those onward to the development of distinct organs of digestion, we can trace a constant increase in the efficiency of the animal body to protect itself against the poisonous effects from ingestion of alien proteids, against the dangers of anaphylaxis.

It may not be amiss to cite an example: the horse harbors tetanus bacilli in its intestinal canal with perfect safety to itself, and we may reasonably suppose that the intestinal wall with its digestive juices is capable of disintegrating these germs completely; whereas when inoculated into a wound where the digestive juices are absent, fatal poisoning ensues.

That the intestinal wall with its digestive juices acts as a barrier against the alien proteid substance of the tetanus bacilli is obvious.

Alien proteids having gained entrance to the animal body must

be dealt with either as something to be utilized or something to be got rid of.

If anaphylaxis occurs as a result of proteid cleavage, how is it brought about? For the explanation of this, Eccles reviews the modern ideas in physiology concerning gastric and cellular digestion.

GASTRIC DIGESTION		CELLULAR DIGESTION (EHRlich)	
Protein to be digested	Meat Fish Egg, etc.	Protein to be digested	Cells, bacteria, protozoa, serums, egg-white, etc.
HCl	Neutralizes alkalinity in proteid molecule, converts it into an electrolyte and makes further digestion possible	Amboceptors Antibodies Interbodies	These convert protein to be digested into electrolytes.
Enzyme (called pepsin)	The enzyme directs the hydrogen and hydroxyl-ions so as to split the proteid molecules into amino-acids.	Enzymes Complement Alexin Addiment	These direct the hydrogen and hydroxyl-ions to cleavage (of alien protein into amino-acids).

After the last stage of proteolysis has been reached, a reconstruction of the amino-acids into native proteids takes place; these are directly utilized for the organism's needs.

#### PATHOLOGICAL PHYSIOLOGY OF THE ANAPHYLACTIC PHENOMENON

The amboceptors or antibodies develop in response to the presence of alien proteids or antigens.

Amboceptors are always specific. So that, for every alien proteid we must have a suitable amboceptor.

Since, however, there are so very many proteids, complex in structure, it would seem beyond the bounds of our present understanding of things if special amboceptors were constructed in response to each new proteid.

According to Ehrlich's conception of the amboceptor the problem is indeed simplified and highly plausible.

The amboceptor is constructed in such a way as to lend itself to innumerable combinations, just as the 26 letters of our alphabet

in a case of type lend themselves to the formation of thousands of words, in unlimited combinations, to serve endless purposes.

For proteids to which the organism has adjusted itself, amboceptor and complement have been developed, and the amino-acids and other substances produced in the proteolysis are provided for.

In dealing with strange proteids, for which the organism has had no previous occasion to develop amboceptors and complement, there will occur by-products in the proteid cleavage for which there are no bonds of union.

Whether these be amino-acids or certain toxic substances is not known, but that they are poisonous in the transition stage is certain.

To recapitulate: The primary injection, the sensitizing dose, starts a continued production of amboceptors for the strange proteid. This production reaches its maximum in about 12 days (guinea pig experiment). If at about that time, another injection of the same substance is made, the amboceptors present will cause a rapid proteid cleavage.

When complement is present to completely bind the split proteid, nothing further occurs. If there is not a sufficient amount of necessary complement present, certain products remain unattached and these act as the poisons inciting anaphylaxis.

Some recent work<sup>9</sup> points to the belief that certain sera injected into animals of other species have a direct toxic effect, and while this has much similarity, the effect produced is not apparently a true anaphylaxis.

#### ANAPHYLAXIS AND IMMUNITY

According to Ehrlich's view, the amboceptor is adaptable to reciprocal reception with numerous alien proteid elements, and it exists in proportion to the needs of the organism. Once called into existence, it is supposed that as a result of cell injury,<sup>10</sup> their production is known to continue for a variable time.

Their presence means union with the germ substance of disease and with complement in the blood, complete disintegration of the germ (seed of the disease) takes place, thus preventing further development of the disease. In this manner is immunity produced by passive anaphylaxis.

## MANIFESTATIONS OF ANAPHYLAXIS

As it occurs in the laboratory, in the guinea pig, has been described in the foregoing. In man, up to the present, there are many and various disease conditions which are being classed as anaphylactic phenomena.

Serum disease, first studied extensively by Von Pirquet and Schick<sup>11</sup> as a reaction to horse serum, is characterized by a period of incubation varying from a few minutes or hours to 3 or more weeks.

At the end of this incubation period, the symptoms of intoxication become suddenly manifest, and after a period of a few hours to several days they disappear.

The local symptoms are redness and swelling of tissues and adjacent lymph glands. General symptoms, such as fever, eruptions, edema, swelling of lymph glands, leukopenia and joint symptoms also occur.

In those cases in which anaphylactic shock appears immediately after the first injection, as has been frequently seen in asthmatics after administration of horse serum (diphtheria antitoxin), there occurs redness and swelling of skin particularly about the face, dyspnea, cyanosis, urticaria, edema and swelling of mucous membrane of the upper respiratory tract. Death occurs with cessation of respiration, the heart continuing to beat. The mortality in this class of cases is high.

Anderson and Rosenau collected 19 cases; Gillette collected 28 cases;<sup>12</sup> recently, Thomas and Terribery<sup>13</sup> reported a typical case.

The tuberculin reaction, generally accepted as an anaphylactic manifestation, is well known. Its local and general symptoms are characteristic. Vaccinia is another. There are a number of disease conditions of the human organism believed to be due to anaphylaxis, but as yet not positively proved to be such. The best known examples are poisoning by sea foods, poisoning by certain animal foods, puerperal eclampsia and bronchial asthma. A striking characteristic of many, but not all, of these is an eosinophilia.

The first published observation concerning the eosinophilia was by Moscovitz of New York.<sup>14</sup> I had previously discussed this eosinophilia with some of my medical friends, but on examining the guinea pig's blood while in the state of anaphylaxis, could not

demonstrate an eosinophile increase. Nor could I find that the literature recorded an eosinophilia in serum disease.

In three cases of fish poisoning (canned lobster, one case, and crab meat, two cases), I found eosinophilia constant.

A very striking feature in these cases was a relapse after first increase in diet, with recurrence of general symptoms and blood picture, after an apparent subsidence of the disease.

Eosinophilia is a characteristic of animal parasitic diseases in general, of trichinosis, hookworm, skin parasites and others.

#### OTHER OBSERVATIONS ON ANAPHYLAXIS

Bronchial asthma has been said to present many points of similarity to the anaphylactic phenomenon.<sup>15</sup> If that were true, one should be able (according to Otto<sup>16</sup>) to transmit the sensitizing substance, named anaphylactin, from one animal to another. This I attempted, but no results followed my investigation.<sup>17</sup>

Vaccinia.—In a case vaccinated not long ago, the first inoculation did not take. Ten days later, I inoculated the little girl again with the same supply of vaccine, and by the third day a typical lesion had developed. I was surprised, however, to find that the previous area of inoculation, although it had healed was now red and had gone as far as the papular stage.

An interesting question is whether this child previously had no susceptibility to vaccinia at all, and was sensitized by the first inoculation. The behavior of this corresponds entirely to anaphylaxis. I wish also to record here an empirical observation made when as a resident physician I was handling cases of small-pox. I had observed that after exposure to these cases that the vaccination mark on my arm was very itchy. The other residents of the hospital made light of it, but it seemed too real to me to go by unheeded, so that I remember it distinctly. With the present conception of the anaphylactic phenomenon and in the light of the previous recorded observation, this occurrence becomes more clear.

#### DIAGNOSTIC POSSIBILITIES BY ANAPHYLAXIS

With a clearer concept of this phenomenon, all-embracing as it promises to be, there will be opened many new avenues for practical application.



It seems reasonable to suppose that diagnosis by inoculation will be developed more extensively than at present. Not only may alien substances be detected, but it may be that native disease products might thereby be discovered.

While tumors are native tissues, yet their cell composition and function are abnormal. It may be that their chemical structure is sufficiently changed to respond to inoculation of like tissue substances. If that were possible, it would render early diagnosis of various tumor formations more accessible than at present.

#### THERAPEUTIC POSSIBILITIES

The therapeutic possibilities that this field of work may open are limitless. Inoculation with vaccinia, with typhoid, with cholera, with tuberculin preparations all suggest the impending possibilities.

If we can produce passive anaphylaxis, we have immunization; therein lies the problem and its reward.

So that we may well say that with the discovery of the meaning of anaphylaxis we were led to a new threshold in medicine, opening out upon a broad expanse with unlimited opportunities.

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## RECENT PROGRESS IN THE DIAGNOSIS OF GASTRIC DISEASES

By HARRY G. WATSON

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Post-Graduate Medical School and Hospital; Assistant in Medicine  
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The tendency in former years to attribute all those disorders commonly called indigestion to the stomach, is being overcome. Only recently, one of our most famous gynecologists who had suffered for years from indigestion and who probably blamed his stomach, was operated on, and it was found that his uncomfortable feelings had been due to a diseased gall-bladder.

At the present time, I have a patient in the hospital whose history points to some gastric disturbance. He has distressing attacks of vomiting and excruciating pains in his intestines. His symptoms cover a period of six years. During that time his appendix has been removed, and later his gall-bladder was inspected and found to be normal—so I was informed—and still these attacks persist. What, then, is the cause of these severe symptoms? *Tabes*, producing intestinal crises.

The patient denies any specific history, although he acknowledged he had a soft chancre sixteen years ago. The Wassermann reaction is negative, although he gives definite signs of *tabes*. Absence of the patellar reflexes, Argyll Robertson pupil, Romberg, etc. The blood pressure in this case was very low,—between 80 and 100,—a point for the contraindication of the injection of *salvarsan*.

The differential diagnosis between intestinal crises and *angina abdominis* should always be considered. This condition of *angina abdominis* is found in those cases which give a history of *angina pectoris* and arteriosclerosis. The principal points to be noted in a suspected case of *angina abdominis* are: the history, a high blood pressure, and the effects of the treatment, which should consist of the administration of amyl nitrate, the iodides, and the regulation of diet.

It is well known that of all the functions of the stomach, that of motility is the most important.

Von Noorden and Einhorn have demonstrated that man can be perfectly well when there is an absence of gastric secretion. But as soon as there is an impaired motility of the stomach, symptoms of stagnation and signals of distress are shown. Mistakes have frequently been made in making a diagnosis of impaired motility due to obstruction at the pylorus, and advising operation. We have had several cases of this nature at our clinic at the Post-Graduate Hospital. This impaired motility is very often due to a ptosis of the stomach, with dilatation and some kinking at the pylorus. In this condition, the gastric contents are changed and we often get a marked diminution in hydrochloric acid. Brown, of the Johns Hopkins University, reports a series of forty cases of gastropptosis with disturbed motor function, and anomalies of secretion. He reports a disturbance in motor function in a majority of these cases; in 12 there was no free hydrochloric acid; in 14, it was below 20; in 10, between 20 and 50; while in 4 it was over 50. He suggests that this may be one of the most important factors of achylia gastrica.

There has been no improvement over the Ewald test breakfast as a means of diagnosis of the gastric secretion. Fuld gives 2 grams of sodium bicarbonate in 50 cc. of water, and says he can determine the presence of free hydrochloric acid by the sound of effervescence in the stomach.

The Einhorn thread impregnation test for ulcer of the stomach and of the duodenum, is a very helpful means of diagnosis. The patient swallows a little metal bucket attached to a silk thread. This remains in the stomach and duodenum over night, and the next morning it is withdrawn. Where the thread comes in contact with the ulcer, there will be a brown impregnation, which will show the presence of ulceration, and the distance from the teeth to the brown spot will show whether the ulcer is in the stomach or the duodenum. Morgan, of Washington, has tried this test a hundred times, and has been well satisfied with the result. I had a case recently of suspected duodenal ulcer, in which the test on three different occasions, a week apart, showed the brown impregnation always at 20 to 21 inches from the teeth. Several other cases of gastric ulcer gave the brown spot.

The Einhorn duodenal pump is another aid in diagnosis of the condition of the stomach and duodenum. It is also hoped that this test will give some inkling as to the diagnosis in pancreatitis by the aspiration of the pancreatic juice and the examination of it. The Cammidge reaction as a means of diagnosis of disease of the pancreas, has been shown to be misleading and valueless. One of the chief advances in diagnosis of ulcer shows that the majority are not in the stomach at all, but in the duodenum—in fact, about 60 per cent.

We are still at sea as to the origin and cause of cancer. There is no doubt there exists a precancerous stage, but as yet we are unable to diagnose this condition. The Mayos have shown conclusively that one of the chief causes of cancer is ulcer. In a most valuable and interesting contribution, entitled "The Pathology and Clinical Significance of Gastric Ulcer," MacCarty, of the Mayo Clinic, reports upon a series of 216 resections of the stomach for ulcer, ulcer and carcinoma, or carcinoma, and it was found that 71 per cent. of the resected specimens of gastric carcinoma were associated with ulcer, and 68 per cent. of resected gastric ulcers were associated with carcinoma.

The antitryptic index for serodiagnosis of cancer has been simplified by Roux and Savignac. They found the test positive in 89 per cent. of 53 certain cases of cancer, and in 80 per cent. in suspected cases.

Early diagnosis of gastrointestinal cancer by meiostagmin and hemolytic reactions have been reported by Kelling. He reports distinct positive reactions in 47 per cent. of 45 cases of cancer tested for the meiostagmin reaction; while positive findings were obtained in only 3 of 85 with non-malignant affections.

## General Retrospect

### HEMATOPORPHYRINURIA (A REVIEW OF RECENT LITERATURE)

By LOUIS BERTRAM SACHS

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Although the presence of a pathological amount of hematoporphyrin in the urine is a comparatively infrequent occurrence, nevertheless, enough instances of this very interesting morbid phenomenon have been clinically observed to render it sufficiently important to the profession.

Hematoporphyrin is simple hematin without the iron, and as hematin is derived from hemoglobin it is of interest to know what metabolic processes, whether normal or abnormal, are concerned in its production. It is stated that hematoporphyrin and bilirubin are probably of synchronous production—their seat of formation being in the liver cells especially;—the readily convertible hematoporphyrin is utilized for the synthesis of the hemoglobin molecule, the non-utilizable being excreted with the intestinal contents. If this be true, hematoporphyrin is a normal intermediary product of metabolism. Other investigators are opposed to this deduction,

since the normal bile does not exhibit hematoporphyrin, and therefore they are of the opinion that it does not play an important rôle in normal metabolism. It is generally thought that the liver cells are the site of the production of an abnormal amount of hematoporphyrin, for in cases of drug poisoning excessive amounts of this substance could always be found in the hepatic cells while it was constantly absent from the spleen, blood vessels, muscles, and marrow. Nevertheless, it must be remembered that the liver is an important excretory organ, and therefore its occurrence therein is no proof of its hepatogenous formation. Garrod states that a perversion rather than an increase of hemoglobin catabolism is responsible for a pathological output of hematoporphyrin in the urine.

Hematoporphyrin occurs in small amounts in normal urine and contributes toward its normal color, but it is never normally present so as to exhibit the spectroscopic bands or to change the color of the urine. The term hematoporphyrinuria is reserved for such cases when hematoporphyrin is present in sufficient quantity to exhibit the characteristic spectroscopic bands. Urines which contain an excess of hematoporphyrin vary as a rule from a pink to a black color, the depth of the color varying greatly under different conditions. It has been shown by Hammersten that these abnormally colored urines contain other abnormal pigments besides hematoporphyrin; Soberheim states that hematoporphyrinuria may persist after the abnormal color has almost disappeared. Garrod says that hematoporphyrin may be removed from a urine without markedly altering its color and a corresponding amount of hematoporphyrin may be added to a normal urine without producing any great change in its appearance. It is evident that the color of the urine has nothing to do with the hematoporphyrin but that it is due to some other pigment. *Monroe* states that there are cases where an excess of hematoporphyrin is present without the usual accompanying pigment, and that it is reasonable to expect that cases will be met with where the abnormal pigment is present in the urine and yet without an excess of hematoporphyrin. He cites such a case and quotes Douglas of the West Scotland Clinical Research Laboratory as stating that in this particular case the abnormal color of the urine was not due to bile, but to that unidentified pigment not infrequently met with in cases of hematoporphyrinuria. Therefore, when a urine is observed exhibiting the characteristic color of a case of hematoporphyrin, it must not be concluded that it is caused by an excess of hematoporphyrin until the clinical and spectroscopic tests have confirmed its presence.

The spectroscopic appearance of hematoporphyrin depends on whether it is combined with an acid or an alkali. Acid hematoporphyrin gives a spectrum with an absorption band on either side of

D, the one nearer the red end of the spectrum being the narrower. Alkaline hematoporphyrin possesses four absorption bands. The first is a very faint, narrow band in the red, midway between C and D; the second is a broader, darker band lying across D, principally to the violet side; the third absorption band lies principally between D and E, extending for a short distance across E to the violet side, and the fourth band is broad and dark, and lies between b and F. The first band mentioned is the faintest of the four, and is the first to disappear when the solution is diluted.

There are a number of chemical tests for hematoporphyrin in the urine, the simplest one of which is the following: To 100 c.c. of urine add about 20 c.c. of a 10 per cent. solution of potassium hydroxide or ammonium hydroxide. The precipitate which forms consists principally of earthy phosphates to which the hematoporphyrin adheres and is carried down. Filter off the precipitate, wash it and transfer it to a flask and wash with alcohol, acidify with hydrochloric acid. By this process the hematoporphyrin is dissolved and on filtering will be found in the filtrate and may be identified as acid hematoporphyrin by its two-banded spectrum which changes on making alkaline to the four-banded spectrum of alkaline hematoporphyrin.

*Brown and Williams* state that hematoporphyrin in the urine is often in combination with metals, and then it will show the two spectroscopic bands identical with oxyhemoglobin, being unaltered on the addition of glacial acetic acid or reducing agents. If such a urine is treated with strong hydrochloric acid, it will show the two bands typical of acid hematoporphyrin.

Hematoporphyrin is often associated with an excess of urobilin, and when this occurs urobilin is extracted from the urine by a modification of Garrod and Hopkins' process. Urobilin and hematoporphyrin are then identified spectroscopically.

Hematoporphyrin may be present in the urine continuously for a long period, even for a number of years, or it may occur intermittently or paroxysmally. In the latter cases, some diffuse morbid condition of the liver seems to be responsible for its occurrence. It disappears gradually from the urine, and may in some cases be entirely absent in from 2 to 3 weeks after its inception.

Cases of hematoporphyrinuria may be divided into two groups. First, those cases which follow the administration of some drug, and secondly, cases which are associated with a variety of morbid conditions. It is a well known fact that hematoporphyrinuria may follow the administration of sulphonal in toxic doses. It has also been noted to occur after the administration of trional, tetronal and quinin. Cases of chronic plumbism are almost constantly associated with hematoporphyrinuria. *Wiener* recently reported a fatal

case which resulted from saffron poisoning in an effort to induce abortion.

The most prominent symptoms in cases of hematoporphyrinuria due to drugs are, according to Garrod and Hopkins, vomiting, constipation, and abdominal pains. Slight hemorrhage from the rectum is sometimes present. Though most cases are mild in character, nevertheless fatal cases are not infrequent, and in these cases the liver cells will show a fatty degeneration. Cases exhibiting hematoporphyrinuria have frequently died from sulphonal poisoning, and the case of saffron poisoning reported by *Wiener* ended fatally, having had severe colic, vomiting, purging, convulsions, and coma.

From a clinical standpoint those cases of hematoporphyrinuria are of most interest which are non-medicinal in character, and which are associated with a variety of pathological conditions. *Heinrich Stern* has reported a case of hematoporphyrinuria in a patient who had diabetic glycosuria with intercurrent icterus, and he is of the opinion that in this case the icterus, glycosuria, and hematoporphyrinuria were interrelated, i. e., that one and the same anomaly was the causative factor of the three manifestations. The icterus set in when the chronic glycosuria was present, and it did not recur until the hematoporphyrinuria had again vanished. *Monroe* and *Borland* report a case of hematoporphyrinuria in a patient who had symptoms resembling those of a mild diabetes. *Dana* describes a case in a man 67 years of age who had apoplectic seizures with temporary hemiplegia, a short excited and a long confusional mental state which lasted for three months. During two months of this illness hematoporphyrin was present in the urine. A fatal case of hematoporphyrinuria is described by *Cushing*. The patient died 10 days after the beginning of the hematoporphyrinuria. The symptoms were vomiting, constipation, progressive weakness with obscure nervous phenomena, and finally incontinence of urine and feces, and then death in coma. *Brown* and *Williams* report a recurrent case of hematoporphyrinuria associated with attacks of abdominal pain, severe vomiting and constipation. Hematoporphyrinuria has been known to occur in cases of gastric ulcer, Graves' disease, hereditary syphilis, and a few other morbid conditions.



## Progress of Diagnosis and Prognosis

### GENERAL METHODS OF EXAMINATION—SYSTEMIC AFFECTIONS—DISORDERS OF GENERAL METABOLISM

**Fluctuations of the Serum Concentration in Healthy Man**—A. BÖHME, *Deutsches Archiv f. klin. Medizin*, Vol. CIII, Nos. 5 and 6.

The individual serum concentration is quite stable. Muscular activity causes rapid and marked increase of the serum concentration. WESTERN.

**Water Content of Human Adipose Tissue**—O. BOZENRAAD, *Deutsches Archiv f. klin. Medizin*, Vol. CIII, Nos. 1 and 2.

The watery constituents of human fat (mammary, abdominal wall, etc.) fluctuate between 7 and 46 per cent. The fat of the same individual, but of different parts of the organism, shows varying amounts of water. Adipose tissue of well nourished individuals contains decidedly less water than does the fatty structure of emaciated persons. WESTERN.

**Physiology and Pathology of Cerebrospinal Fluid**—REICHMANN, *Deutsche Zeitschr. f. Nervenheilkunde*, Vol. XLII, Nos. 1 and 2.

Among all the body liquids the cerebrospinal fluid occupies a unique position. The proportion of the component parts of the cerebrospinal fluid is liable to change in one and the same individual. In the normal fluid lactic acid and sugar are invariably demonstrable; in diabetes the amount of sugar is increased, and acetone and diacetic acid may also be present. WESTERN.

**New Method for the Determination of Sugar in the Blood**—H. TACHAU, *Deutsches Archiv f. klin. Medizin*, Vol. CII, Nos. 5 and 6.

This new method may be performed with small amounts of blood. The average amount of blood-sugar in healthy individuals was found to be 0.078 per cent. Blood-sugar is increased in febrile states; in pneumonia the increase endures the crisis. In diseases of the liver and nephritic conditions there exists also an increase of sugar in the blood. WESTERN.

**Diastase Excretion in Urine; its Diagnostic Import**—E. MARINO, *Deutsches Archiv f. klin. Medizin*, Vol. CIII, Nos. 3 and 4.

The urinary excretion of diastase is much diminished in diabetes mellitus and nephritis. In pancreatic diseases the diastase excretion in the urine is increased. This increase must be regarded as an important symptom of pancreatic affection. In pernicious as well as secondary anemia the urinary diastase is markedly decreased. The determination of diastase is very valuable in the estimation of renal function.

WESTERN.

**Relation of Meat Ingestion to Indicanuria in Children**—E. C. FLEISCHNER, *Am. Jour. Dis. Children*, Oct., 1911.

With an ordinary diet containing meat once daily, children 6, 9 and 12 years old succeed in digesting their food fairly well without much putrefaction in the intestinal canal. Three-year-old children, on the other hand, with the same diet are much more apt to show indicanuria. The giving of meat twice daily produces in 9- and 12-year-old children practically no change in the amount of intestinal putrefaction. In 6- and even more markedly in 3-year-old children meat given twice daily gives rise to a decided increase in the indicanuria and is a cause of pronounced intestinal putrefaction.

WESTERN.

**Sugar Excretion in the Nursling**—H. SOTHMANN, *Zeitschr. f. Kinderheilkunde*, Vol. II, p. 503.

Alimentary mellituria does not only ensue in nurslings with alimentary intoxication, but also occurs in prematurely born children with apparent healthy intestinal tract. However, there are quantitative differences in the sugar excretion.

MILL.

**Transitory Glycosurias in Phlegmonous Diseases**—G. BECKER, *Münchener med. Wochenschr.*, Sept. 26, 1911.

In phlegmonous processes there may occur transitory glycosurias which have nothing to do with diabetes. Some individuals with a phlegmonous affection exhibit a diminished assimilation power when large amounts of grape sugar are being ingested, even when no phlegmons happen to be present. In these individuals there is a predisposition to diabetes.

MILL.

**Excretion of Creatinin and Creatin under Pathological Conditions**—A. SKUTETZKY, *Deutsches Archiv f. klin. Medizin*, Vol. CIII, Nos. 5 and 6.

Creatinin excretion is increased in febrile states, after marked

muscular activity, after the epileptic attack, after injection of arsenobenzol in nervous diseases, and when on a meat regimen which was preceded by a long-continued milk regimen. Creatinin excretion is diminished in hepatic diseases, Basedow's disease, diabetes mellitus, and marasmatic diseases. Creatin excretion is augmented in fever, marked muscular activity, and after injections of arsenobenzol. Creatin excretion is much augmented in hepatic diseases and Basedow's disease.

WESTERN.

**Autointoxication with Acids**—O. FORGES, Wiener klin. Wochenschr., Aug. 10, 1911.

Labored respiration is a rather constant pathognomonic symptom of acidosis. Hyperpnea is the result of increased pulmonary activity in the excretion of CO<sub>2</sub>. Accordingly, the amount of CO<sub>2</sub> in the blood is diminished in the pertaining instances. Among the causes of acidosis increased acid formation plays the main rôle in diabetic coma, conditions of inanition, etc. Acid intoxication may also be called forth by an insufficiency of the acid excreting organs. There exists also an acidosis of unknown origin which appears in carcinomatous patients and pregnant women.

MILL.

**Orthostatic Albuminuria**—F. P. WEBER, British Jour. Children's Diseases, Sept., 1911.

The posture of the patient, not the time of day or the time of meals, is the chief determining cause in the production of orthostatic albuminuria. If a patient with orthostatic albuminuria remains lying in the recumbent position throughout the day, no albumin appears in the urine. In addition to the ordinary serum albumin, the urine sometimes contains a little of the protein formerly thought to be nucleo-albumin, precipitated by acetic acid in the cold. Calcium oxalate crystals are often present, and occasionally a few red blood cells are found. Usually tube casts are absent, but by the help of the centrifuge a few hyaline casts may be detected. The prognosis of orthostatic albuminuria is so good that no candidate for life insurance should be rejected in the absence of other points against him.

SACHS.

**Clinical Symptoms in Long-Continued Anuria**—W. BRASCH, Deutsches Archiv f. klin. Medizin, Vol. CIII, Nos. 5 and 6.

Long-continued Anuria is not always followed by uremia. Uremic symptoms may supervene without nephritic changes. Uremia may be solely due to the retention of the products of retrograde metamorphosis. Non-occurrence of eclamptic-uremic conditions

does not speak against the retention theory. In long-continued anuria there is always an increase in blood pressure. The uremic toxins probably irritate the vasomotor apparatus. In anuria cardiac dilatation ensues sooner than in nephritis. Edema does not supervene regularly. When there is no edema it appears that the stomach takes care of the water excretion.

WESTERN.

**Methylene Blue Test in Urine of Cancer Patients**—J. R. VERBRYCKE, Med. Rec., Oct. 28, 1911.

Author employed the methylene blue test as described by Fuhs and Lintz (see ARCHIVES OF DIAGNOSIS, Vol. IV, No. 3). After examinations in 50 cases certainly not malignant, 4 cases of gastric carcinoma and one probable cancer, he reaches the positive conclusion that this test is valueless.

WESTERN.

**Meiostagmin Reaction in the Presence of Malignant Growths**—F. LEIDI, Berliner klin. Wochenschr., Sept. 18, 1911.

Author's results with the meiostagmin reaction confirm its clinical value, which is, however, not an absolute one. This reaction, first described by M. Ascoli (see ARCHIVES OF DIAGNOSIS, Vol. III, p. 286; Vol. IV, p. 196), is a diagnostic method of marked import. Concerning the execution of the method it must be stated that it is connected with some technical difficulties which still exclude it from routine employment.

MILL.

**Pain Symptoms in Polycythemia**—H. VAQUEZ and C. LAUBRY, Lyon méd., 1911, No. 32.

Pain symptoms occurring in the form of a localized erythromelalgia have occasionally been observed in polycythemia. In advanced stages of the affection purpuric eruptions, intraarticular and extra-articular hematmata and articular pains simulating a rheumatic affection, present themselves. Finally ulcerations and superficial skin necroses supervene.

ZIMMER.

**Acute Painful Symmetrical Lipomatosis**—J. KLINKOWSTEIN, Med. Klinik, Aug. 20, 1911.

A woman, 23 years old, exhibiting symptoms of gastric ulcer, developed suddenly a number of palpable but invisible skin nodules. They were symmetrically arranged and were exceedingly painful on pressure as well as spontaneously. Microscopically the nodules were genuine lipomata in which no nerve fibers could be demonstrated.

MILL.

**Frequency and Diagnosis of Disturbances due to Thyroid Hypersecretion**—L. KRECKE, *Münchener med. Wochenschr.*, July 25, 1911.

Author proposes the term "thyroses" for all disturbances due to thyroid overactivity. He differentiates between thyroses of light and severe degrees. According to the prevailing symptom-complex there exist thyroses with predominant cardiac disturbances; thyroses with predominant association of the nervous system; thyroses with marked diminution of the nutritive state, and thyroses with the clinical picture of iodine intoxication. In the differential diagnosis between thyrosis and organic heart disease blood examination (lymphocytosis), digitalis, antithyroidin, iodine and finally strumectomy may be employed. The diagnosis of thyrosis shall only be made when there is a definite goiter, or when there are other thyroid symptoms, especially such of the circulatory apparatus. Rapidly progressing emaciation may be ascribed to thyroid disturbance when there is a struma, when an affection of the gastrointestinal canal may be excluded, and when there occur thyroid symptoms of other organs.

MILL.

**Syndrome of Pluri-Glandular Insufficiency with Ovarian Lesions**—ABRAMI, KINDBERG and COTONI, *Revue de Médecine*, 1911, No. 8.

In a girl 15 years old, after an infection of undetermined character, there developed a subacute nephritis with epileptiform attacks and belated rachitis. A stagnation in the intellectual development and in the genital sphere was also noticeable. Finally a series of skin lesions, manifesting themselves as myxedema, scleroderma and ichthyosis, supervened. The entire symptom-complex was ascribed to pluri-glandular insufficiency, i. e., thyro-genital inefficiency. Necropsy showed the thyroid gland intact but demonstrated grave changes in both ovaries.

ZIMMER.

**The Presence of the Embryos of *Trichinella Spiralis* in the Blood of Patients suffering from Trichiniasis**—A. R. LAMB, *Am. Jour. Med. Sci.*, Sept., 1911.

The examination of the blood sediment for the embryos of *trichinella spiralis* is a valuable diagnostic means in cases suggesting trichiniasis. From the small number of cases so far reported, it would appear that the method had not been used as frequently as its value would merit. It must be remembered, however, that even under favorable conditions, this method is not infrequently unsuccessful. The technic of the examination is very simple. While the search for the embryos is tedious, it is scarcely more so than the examination of the blood for the plasmodium of malaria. The

earliest time at which the embryos may be found in the blood is on the sixth or seventh day after infection. The latest date is not so accurately fixed. While the parasites have not been found later than the twenty-seventh day after infection in guinea-pigs nor later than the twenty-second day after the onset of symptoms in man, there is some ground for the belief that they may occasionally be recovered in the fifth or possibly the sixth week after infection. This method is of greatest value in those cases where the diagnosis is doubtful and especially where the patient refuses permission to excise a piece of muscle or where the muscle findings are negative. WESTERN.

## INFECTIOUS DISEASES

**Detection of Tubercle Bacilli in Sputum**—F. W. AURICH, *British Med. Jour.*, Sept. 16, 1911.

Author describes Koslow's method for examining the sputum for tubercle bacilli. By this method more than 15 per cent. of otherwise negative tests proved positive. A quantity of the sputum is shaken up for 5 minutes with antiformin in a glass-stoppered vessel, such as a measure cylinder. If the sputum is very viscid an equal proportion of antiformin is used, if thin, half the amount will suffice. It is then diluted with a volume of water about 10 times the amount of the antiformin used, and shaken for a few minutes. Then a mixture is added composed of equal parts of ether and acetone, equal in volume to that of the water, the whole is then shaken for a few seconds and allowed to stand. The contents of the bottle will separate into three layers, and the middle layer appearing as a dense white band will contain nearly all the tubercle bacilli in the sputum. Before staining, the dried film is immersed in a 5 per cent. sulphuric acid solution in order to neutralize any adhering alkali; the slide is then washed to remove the acid. SACHS.

**Cutaneous Tuberculin Reaction**—A. RADZIEJEWSKI, *Zeitschr. f. Kinderheilkunde*, Vol. II, p. 520.

The reaction of von Pirquet is specific for tuberculosis. There exist no inactive forms of tuberculosis in the first months of life; the active forms of tuberculosis cause death in the majority of instances. The positive reaction in these cases gives therefore an unfavorable prognosis. The cutaneous reaction is also a valuable diagnostic means in older children. MILL.

**Ocular Tuberculin Reaction in the Early Diagnosis of Phthisis—A. S. HOSFORD, British Med. Jour., Sept. 22, 1911.**

Author concludes from a study of 225 cases in which the reaction was used that a negative result by no means excludes pulmonary tuberculosis, as some very advanced cases fail to give the reaction. He has never obtained a positive result except in true cases of pulmonary tuberculosis. No bad results whatever from the use of the test as regards the eye were observed in any case. If in a suspicious case the patient fails to give the reaction, then the test should be applied on three different occasions with an interval between each application of from 3 to 4 weeks. SACHS.

**Subacute and Chronic Pulmonary and Bronchial Pneumococcal Diseases—O. CROUZON and CH. RICHER, Revue de Médecine, 1911, No. 8.**

When the pneumococcus was first discovered but one affection was ascribed to its activity, i. e., acute lobar pneumonia. Later on it was demonstrated that the pneumococcus gave also cause to other pulmonary affections such as congestion of the lungs, pleuro-pneumonia and a certain group of broncho-pneumonias. Occasionally the pneumococcus may become localized in the bronchial tubes, where it may induce a subacute and a chronic form of bronchitis. This chronic type of bronchitis runs the course of bronchitis pseudomembranacea. ZIMMER.

**Afebrile Erysipelas—E. VON CZYHLARZ, Berliner klin. Wochenschr., Sept. 11, 1911.**

Of 324 cases of erysipelas in women 29 cases run an afebrile course. In all instances there was a typical erysipelatous swelling, but the cases were of a mild character and rather limited in extent. Most cases without fever were such of facial erysipelas. MILL.

**Meningism in Infectious Diseases—KIRCHHEIM and SCHRÖDER, Deutsches Archiv f. klin. Medizin, Vol. CIII, Nos. 3 and 4.**

In infectious diseases, especially pneumonia and typhoid fever, there appear occasionally pronounced meningeal symptoms without change in the cerebrospinal fluid and alterations of the meninges demonstrable at autopsy. Such conditions are usually designated as meningism or pseudo-meningitis. A functional disturbance due to toxins, whether carried to the brain by the blood or produced therein by localized bacteria, need not correspond to the tangible pathological changes; pathologico-anatomical alterations may ensue without functional disturbances, and the latter may occur without

a pathological substrate. Be this as it may, meningeal phenomena may supervene without any change in the meninges, and be solely the consequence of toxic influences upon the central nervous system.

WESTERN.

**Meningitis following Measles**—C. A. BASKER, *Lancet*, Aug. 19, 1911.

During an epidemic of an unusually severe form of measles, 6 cases of this malady were complicated by meningitis. In one of the patients the disease was primarily pneumococcal. The other 5 cases had symptoms of post-basic meningitis. In 3 of these cases the cerebral symptoms followed the measles, one a week, one 6 weeks, and one 8 weeks after the rash had been noticed. In all of the cases the onset of the disease was sudden, most of the patients vomited and rapidly lost consciousness, and retraction of the head and Kernig's sign were well marked. It is probable that the meningococcus was responsible for the meningitis in all of the cases.

SACHS.

**Blood Picture in Epidemic Cerebrospinal Meningitis**—RUSCA, *Deutsches Archiv f. klin. Medizin*, Vol. CIII, Nos. 3 and 4.

In the beginning of epidemic cerebrospinal meningitis there exists leucocytosis with an especial increase of polymorphonuclears. During the course of the disease there is a divergence of the curves of polymorphonuclears and lymphocytes during recrudescence; there is a parallelism of the curves when the acute phenomena are declining. In cases which recover the curves of the polymorphonuclears and lymphocytes cross each other with normal or supernormal eosinophiles. The curves do not cross each other and there are no eosinophiles nor mastcells in cases running a lethal course.

WESTERN.

**Cerebrospinal Meningitis due to Bacillus Influenzae**—L. J. RHEA, *Arch. Int. Medicine*, Aug., 1911.

The influenza bacillus may produce a meningitis in which there are extensive intrapial hemorrhages. In influenzal meningitis there may be an acute inflammatory reaction about the blood vessels in the brain substance. These inflammatory changes may be related to some of the permanent lesions of the central nervous system following some of the acute illnesses associated with cerebral symptoms. Bacteremia may develop in the course of influenza. The organization of an acute exudate in influenzal meningitis may, by interfering with the normal circulation of the cerebrospinal fluid, lead to internal hydrocephalus. In chronic meningitis following



acute influenzal meningitis the arteries of the meninges may show varying degrees of increase in connective tissue internal to the internal elastic membrane. Influenzal meningitis may be followed by paralysis of varying extent. WESTERN.

**Influenza of the Brain**—STEPP, Med. Klinik, Aug. 20, 1911.

Author observed three cases of grave influenza in the course of which there appeared paralysis of certain parts of the organism. The palsies must be ascribed to an affection of the most minute brain capillaries resulting in diapedesis. MILL.

**The Scarletina Phenomenon of Rumpel-Leede**—C. LEEDÉ, Münchener med. Wochenschr., Aug. 1, 1911.

A positive result points to the presence of scarlet but only when there are other typical scarlet symptoms; a negative result definitely excludes scarlet. MILL.

**Hemorrhages of the Skin; Value of the Rumpel-Leede Phenomenon**—F. W. STRAUCH, Münchener med. Wochenschr., Aug. 15, 1911.

There are particularly two groups of diseases in which skin hemorrhages are frequently observed, i. e., the blood diseases and the syndromes of the hemorrhagic and exudative diatheses on the one hand and the various forms of the septic affections on the other. Author employed artificial hyperemia to induce skin hemorrhages. Of 160 healthy individuals 45 per cent. exhibited hemorrhages on the inner surface of the elbow after hyperemia of the upper part of the arm lasting from 5 to 20 minutes. The male sex between the eighth and fourteenth year is more prone to cutaneous hemorrhages than the female sex in the same period of life. Of 180 patients experimented on by artificial hyperemia 59 per cent. reacted positively. No marked difference as to the extent, intensity, time of appearance and disappearance of these hemorrhages in the healthy and the sick could be demonstrated. Except in scarlet, hyperemic hemorrhages could invariably be induced in measles and blood diseases, and frequently in articular rheumatism, in cardiac and renal diseases concurring with increased blood pressure, and in nearly all affections associated with pronounced temperature elevation. The Rumpel-Leede phenomenon is not pathognomonic of scarlet, especially in males, but its non-occurrence speaks against scarlet. MILL.

**Typhoid Fever in Children; an Analysis of 100 Consecutive Cases**—E. B. SMITH, British Jour. Children's Diseases, Sept., 1911.

In a large majority of cases of typhoid fever in children, the onset is characterized by either vomiting, diarrhea, meningitic symp-

toms, general malaise, diffused bronchitis, or general emaciation associated with headache and bronchitis. Occasionally the most prominent symptom is tonsillitis or marked emaciation. The prognosis, as a rule, is good. It is impossible to determine at the beginning of the illness which way the case will progress. In this series of 100 cases there was a mortality of 7 per cent. from the following causes: perforation, 2; toxemia, heart failure, 2; pneumonia, 1; suppurative parotitis, 1; pneumonia, empyema, cancrum oris, 1.  
SACHS.

**Concurrence of Acute Articular Rheumatism and Typhoid Fever**—F. KAYSER, Wiener klin. Rundschau, 1911, No. 23.

The simultaneous occurrence of acute articular rheumatism and typhoid fever is rare; most instances of this association which are reported in literature are spurious. Author maintains that there are but six genuine cases of this association to be found in literature. He describes an additional case of the combination of the two affections. The patient, who was 13 years old, developed typical swellings of the joints and violent fever in the eighth week after onset of typhoid fever with positive Widal reaction, and two weeks of afrebrility. The symptoms of acute articular rheumatism soon disappeared after administration of salicylates.  
MILL.

**Brill's Symptom-Complex; Typhus Fever; Manchurian Typhus**—G. A. FRIEDMAN, Arch. Int. Medicine, Oct., 1911.

Author advances the following conclusions: Typhus fever occurs sporadically in many regions. Mortality from typhus fever no longer reaches the high figures quoted by old observers of the disease. Typhus is little contagious wherever good ventilation, abundance of light and good hygienic conditions exist. Epidemics of typhus may occur at very infrequent intervals even where the disease is endemic. Brill's symptom-complex is identical with mild and moderately severe cases of typhus fever.  
WESTERN.

## RESPIRATORY AND CIRCULATORY ORGANS

**Importance of Mediastinal Glands**—J. A. HONEIJ, Jour. A. M. A., Sept. 16, 1911.

Enlarged glands occur more frequently on the right side than on the left. Enlarged glands may cause the signs which are often considered as those of early apical tuberculosis. Enlarged glands occur in both tuberculous and non-tuberculous patients and prob-

ably occur as frequently in adults as in children. Positive tuberculin reactions may, therefore, in negative tuberculous cases, be due to enlarged glands in the mediastinum, etc., when apical signs are not present. The results of author's investigations demonstrate the common failure to diagnose the presence of mediastinal or bronchial glands, and show the importance of emphasizing the more careful examination of so-called early tuberculosis cases.

WESTERN.

**Mediastinal Cause of Chronic Cough in Children**—H. FRENCH, *Lancet*, Sept. 9, 1911.

Chronic enlargements of the glands at the bifurcation of the trachea is a frequent cause of a persistent cough in children. The enlargement of the glands is no doubt sometimes associated with tuberculous caseation. The bronchial gland immediately below the right bronchus is affected far more frequently than is the gland upon the left side, and the right phrenic nerve is frequently displaced by the enlarged lymphatic gland in such a way as to probably become irritated by it and thus leads to attacks of purposeless coughing—that is to say, coughing which does not succeed in bringing up any sputum. In a certain number of cases it is possible to demonstrate this enlargement by means of the Röntgen rays.

SACHS.

**Chronic Pneumonia**—L. S. MILNE, *Am. Jour. Med. Sci.*, Sept., 1911.

Chronic pneumonia may be the result of acute pneumonia. The malady is especially met with in debilitated individuals; however, no single factor such as cardiac conditions, nephritis, arteriosclerosis, alcoholism, tuberculosis, or syphilis is responsible for the production of chronic pneumonia. The onset is very irregular in type, and may be acutely febrile, simulating the usual commencement of a croupous pneumonia in individuals of the same age, or typical signs of pneumonic consolidation may be evident without there having been any especial initial pneumonic symptoms, or there may even be no increase in temperature or abnormality of the pulse and respiration rates. The prognosis in conditions of chronic pneumonia is bad, as not only is death very frequent from cardiac insufficiency, but complications, such as empyema, pericarditis, peritonitis, meningitis, etc., are extremely frequent; any of these conditions may ensue even after long periods of apparent quiescence of the pneumonia.

WESTERN.

**Differentiation of Pulmonary Hemorrhage**—MANN, *Münchener med. Wochenschr.*, Aug. 1, 1911.

There are instances in which it is difficult to determine whether

or not a bloody expectoration is due to pulmonary disease. This is especially the case when there occurs an initial hemoptysis in individuals who are apparently well. The sputum which is excreted on the days following the initial hemorrhage consists of dark bluish-red blood clots admixed with much mucus. These clots are no definite indication of the pulmonary origin of the hemorrhage. This can, however, be readily proved by the washing in water of one of these clots in a sufficiently wide test-tube and by renewing a few times the water which becomes blood-tinged. When carefully washed it will be seen that the blood-mucus clot consists of a knot of threads and fibrils. If the clot is then placed into a Petri dish that is standing on a black surface one will readily notice that it is a fibrin cast of a bronchiole. Thus there is positive proof that the blood is derived from the lung, and that coagulation has ensued within the lungs, i. e., in the bronchioles. MILL.

**Mobility of the Heart**—D. FULTON, Jour. A. M. A., Oct. 21, 1911.

From a study of 193 cases author concludes that the determination of the movability of the heart is of considerable value in the differential diagnosis of cardiac dilatation, and that before assuming that the heart is dilated to the right or to the left, the movability of the heart should always be determined. He further states that the immobility or fixation of the heart should always arouse the suspicion of adhesion of the pericardium to neighboring organs. There is probably no serious heart lesion diagnosed less frequently, clinically, than pericarditis with adhesions. Since systolic retraction of the interspaces and other signs of this condition are so frequently absent, it seems that it would be well to emphasize immobility or fixation of the heart as one of the signs of pericardial adhesions. WESTERN.

**Determination of Functional Cardiac Sufficiency**—R. KLEISSEL, Wiener med. Wochenschr., July 3, 1911.

Author estimates functional cardiac sufficiency by means of the injection of either 0.001 gram epinephrin or 0.0005 gram physostigmin followed by blood-pressure determination. The reaction of the patient permits then certain conclusions concerning the tonicity of the nervous system according to the following factors: when there is hypertonicity of the sympathicus epinephrin produces elevation of temperature, increase of pulse frequency and blood pressure, increase of urine, glycosuria. In a vagotonic individual the injection of physostigmin is followed by a decline of pulse frequency and blood pressure, perspiration, flushed face, painful micturition, occasionally increased excretion of urates, and appearance of serum albumin in the urine. MILL.

**Suppression of a Tachycardic Attack during Blood Pressure Determination**—K. GRASSMANN, Münchener med. Wochenschr., July 25, 1911.

In a patient with a pulse frequency of 164 per minute the pulsations dropped to 90 during the process of blood pressure determination. At the same time there also ensued a decline of blood pressure.

MILL.

**Auricular Fibrillation**—C. E. K. HERAPATH, Bristol Medico-Chirurgical Jour., June, 1911.

Author states that auricular fibrillation may be recognized without resort to polygraphic tracings. If one relies on a complete and continuous irregularity, not an occasional one, a visible systolic pulsation in the veins of the neck, and signs of venous engorgement with the absence of a presystolic murmur, there will be few cases where the diagnosis will be wrong.

SACHS.

**Localization of Athero-Sclerotic Processes in Peripheral Arteries**—OBERNDORFER, Deutsches Archiv f. klin. Medizin, Vol. CII, Nos. 5 and 6.

Certain blood-vessels or portions thereof are especially prone to arteriosclerosis; the affected portions, however, change from case to case. Those portions of the blood-vessels which are compelled to move with the skeletal parts to which they are attached remain more elastic and become less and more slowly affected than the non-movable blood-vessel segments. Motion and displacement of the blood-vessel appear therefore to avert its pronounced atherosclerosis. This fact explains the therapeutic value of massage in peripheral portions of the body.

WESTERN.

**Diagnosis of Arteriosclerotic Affections of the Lower Extremity**—J. ROSENBUSCH, Berliner klin. Wochenschr., Sept. 18, 1911.

Description of 5 cases in which the employment of turgosphygmography rendered valuable service. The main difference between turgosphygmography and sphygmography is that the former registers volume pulsation while the latter indicates pressure pulsation.

MILL.

**Raynaud's Disease and Cardio-Vascular Lesions**—J. BRET and J. CHALIER, Revue de Médecine, 1911, No. 8.

Description of a number of cases of Raynaud's disease in which grave lesions of the circulatory apparatus could be demonstrated. The affection of the circulatory apparatus which was found most frequently was mitral stenosis; occasionally aortic insufficiency and

concretio pericardii were met with. Extensive atheromatous degeneration of the peripheral blood vessels could be demonstrated in some instances. The pathogenesis of Raynaud's disease must be ascribed in a certain degree to a spasm of the peripheral arteries called forth by vasomotor disturbances. ZIMMER.

## ALIMENTARY TRACT

**Dilatation of the Esophagus**—W. JÜNGERICH, Med. Klinik, Aug. 27, 1911.

The spastic nature of an esophageal stenosis is evinced by the changeable character of the deglutition, the retention of a comparatively thin sound, the rather good general nutrition, the earlier period of life, and the absence of blood and pus in the siphoned and vomited masses. Spastic esophageal stenosis may be differentiated from diverticle of the esophagus by means of Rumpel's double tube, the methylene-blue test of Bökelmann and the Röntgen rays.

MILL.

**Epigastric Hernia**—L. W. HOTCHKISS, Annals of Surg., July, 1911.

Diagnosis is made by the presence of a tumor in the epigastrium, often discovered only when the patient is in a standing position. The hernia may be in or near the linea alba, linea semilunaris or in one of the linea transversa of the rectus. It is usually associated with other abdominal symptoms, such as colic, constipation, vomiting after meals worse when standing and relieved by lying upon the back. A train of nervous symptoms may supervene. Subperitoneal tumors are differentiated by absence of any gastric symptoms. STEIN.

**Statistics of Peptic Affections in Stomach, Esophagus and Duodenum**—

G. B. GRUBER, Münchener med. Wochenschr., Aug. 1, 1911.

In 4208 necropsies there were found 170 cases of peptic affections. Among the latter 61 per cent. were affected with vascular and cardiac changes; tuberculosis occurred in 37 per cent. This, however, is no proof at all that gastric ulcer, as maintained by Kodon, is caused by tubercle bacilli. Peptic affections were also found 13 times in cirrhosis of the liver, 4 times after trauma, 6 times after burns and the same number of times in alcoholics.

MILL.

**Diagnostic Value of Gastric Analysis in Digestive Disturbances of Infancy**—T. W. CLARKE, Arch. of Pediatrics, Aug., 1911.

The presence of free HCl in the infant's stomach means that

enough acid has been secreted to supersaturate the casein, and that more than enough is present to insure complete peptic proteolysis. It is the acid which has combined with the milk which acts with the pepsin in splitting the protein molecule, and that only; the acid appearing in a free state is a superfluous excess. Pepsin is secreted from birth, and even during intrauterine life, and is always, during health and disease, in relative excess of the acid. In considering the gastric digestion of infants pepsin may be disregarded, and it may be taken for granted that lack of digestive power is not due to lack of pepsin. The most striking changes in the gastric contents occur in certain cases of hypertrophic pyloric stenosis or pylorospasm. WESTERN.

**Eosinophiles in the Gastric Juice in Achylia Gastrica**—S. MOACANIN, Wiener klin. Wochenschr., Sept. 21, 1911.

Eosinophile cells occur in most cases of achylia gastrica. Author describes a case of this affection with gastrogenous diarrhea in which, for the first time, eosinophile cells could be demonstrated in the gastric juice. It is possible that the finding of these cells in the gastric juice may lead to the early diagnosis of atrophy of the gastric mucosa. MILL.

**Polypoid Tumors of the Stomach**—J. SHERREN, British Med Jour., Sept. 16, 1911.

Polypoid tumors of the stomach are met with in patients between the ages of 35 and 55 years, and are more common in women than in men. They are smooth and rounded, often cystic and movable, and are difficult to differentiate from ovarian tumors. They usually hang from the greater curvature of the stomach, and are generally malignant. SACHS.

**Spectroscopic Blood Tests in the Recognition of Occult Gastrointestinal Hemorrhages**—K. CSÉPAI, Deutsches Archiv f. klin. Medizin, Vol. CIII, Nos. 5 and 6.

Description of author's method for the spectroscopic demonstration of blood. The test is very sensitive and may be executed in a few minutes. Alcohol, ether, acetic acid, pyridin and ammonium sulphid are necessary for the performance of the test. WESTERN.

**Ulcer of the Stomach and Duodenum with special Reference to the End Results**—W. J. MAYO, Annals of Surg., Sept., 1911.

In the early stages hyperacidity is fairly constant, though in the older patients or when there is gastric obstruction, acidity may be normal or below normal. A more prominent and persistent

symptom is hypersecretion producing sour belching. Hematemesis is of less importance than was formerly believed. The most important diagnostic sign is food retention, showing a finer degree of obstruction and causing small particles of food to be found in the stomach eight, ten and twelve hours after meals. STEIN.

**Diagnosis of Perforated Gastric Ulcer**—R. MÜHSAM, *Therapie d. Gegenwart*, July, 1911.

In acute perforation of gastric ulcer there occur violent lightening pains in the pit of the stomach; at the same time there exists marked tension of the abdominal walls. The patient appears collapsed. Anamnesis is essential to fortify the diagnosis. Intestinal paresis and peritonitis follow in the wake of the stage of muscular defense. In the paretic period the pains and muscular rigidity decline, the temperature elevation is slight, and the pulse frequency increased. Leucocytosis fluctuates between 12,000 and 30,000.

MILL.

**Results of the Surgical Treatment of Non-Pyloric Gastric Ulcer**—W. ZWEIG, *Med. Klinik*, Aug. 20, 1911.

In non-pyloric gastric ulcer gastroenterostomy defeats one's purpose in the majority of instances; it is a dangerous operation which often causes exitus. Of 12 cases operated upon the result was a good one in 5 patients; in 3 cases it was entirely unsatisfactory, and in the remaining 4 cases there was lethal termination. MILL.

**Hour-Glass Contraction of the Stomach**—K. SPANNAUS, *Beiträge z. klin. Chirurgie*, Vol. LXXV, Aug., 1911.

The diagnosis is based on the history, physical examination and X-ray picture. The history is very similar to that of pyloric stenosis, namely vomiting, pain, and later loss of weight. Air inflation often reveals the true condition, and in one case a definite gurgle could be heard on the passage of gas through the stenosis. Author uses the X-ray merely as a confirmative agent. STEIN.

**Creatin and Creatinin in some Diseases of the Stomach and Liver**—W. F. EMONS, *Tijdschr. v. Geneesk.*, 1911, No. 1.

In 16 patients affected with gastric and hepatic disease (mostly carcinomatous conditions) the excretion of creatinin was decidedly smaller than in healthy individuals. Healthy persons excrete about 2 grams creatinin daily. Author found in his patients from 500 to 900 milligrams of excreted creatinin per day. The examinations are very tedious and do not allow definite clinical conclusions.

WEBB.



**Diagnostic Value of Urinary Pepsin in Gastric Carcinoma**—R. BIELING, *Deutsches Archiv f. klin. Medizin*, Vol. CII, Nos. 5 and 6.

In advanced cases of gastric carcinoma there occurs practically no urinary pepsin excretion. In the beginning of the affection there does not exist a specific type of urinary pepsin excretion which could be employed in differential diagnosis. The quantitative determination of the urinary pepsin is therefore valueless in the early diagnosis of gastric carcinoma.

WESTERN.

**The Tryptophan Test for Gastric Cancer**—J. W. WEINSTEIN, *Jour. A. M. A.*, Oct. 28, 1911.

Author confirms Warfield's conclusions that the glycytryptophan test is of no value in the diagnosis of cancer of the stomach. Swallowed alkaline saliva, as found by Warfield, when mixed with neutral or faintly acid gastric liquid, imparts to the latter the power of producing tryptophan from glycytryptophan. Every specimen of saliva, except one, in a total of eight, was found by author to exert marked peptidolytic power on glycytryptophan within 24 hours.

WESTERN.

**Chronic Colitis and Pericolitis**—A. G. GERSTER, *Annals of Surg.*, Sept., 1911.

Diagnosis is made by periodic appearance of a palpable, movable, painful, tympanitic tumor in the right iliac fossa associated with violent attacks of colic in the cecal region. Gurgling sounds are often elicited over the mass. Patients are usually habitually constipated.

STEIN.

**Membranous Pericolitis**—H. S. CROSSEN, *Surg. Gyn. and Obstetrics*, July, 1911.

The distinctive symptoms of membranous pericolitis are developed from two factors (1) interference with the peristalsis of the colon, (2) gas distension of the cecum. The pains, though coming in attacks like appendicitis, are not associated with fever and there is no local point of tenderness but a diffused tenderness throughout the lower right abdomen. There is decided gas distension with the attacks and a history of chronic constipation.

STEIN.

**Intestinal Obstruction**—R. MORISON, *Edinburgh Med. Jour.*, Sept., 1911.

The diagnosis of intestinal obstruction is based upon a trinity of signs, namely, (1) spasmodic pain; (2) inability to pass flatus, and (3) evidence of increased peristalsis. Shock occurring in a case of acute obstruction usually means obstruction plus strangulation; however, shock may be present without strangulation, and

strangulation without shock. In the cases of shock without strangulation there is always free fluid in the abdomen, and marked congestion of the intestine above the obstruction, similar in character to that found with a strangulation. SACHS.

**Traumatic Rupture of Abdominal Viscera**—A. R. SHORT, *Lancet*, Sept. 16, 1911.

From a series of 30 cases of traumatic rupture of abdominal viscera author states that no favorable opinion must be based solely or principally on the rate or character of the pulse. In 10 patients with ruptured liver, pancreas, or spleen, the pulse-rate when the patient was first seen, was in one case 100, in another 99, and in 7 about normal. In every case of rupture of any abdominal viscus in which the pulse-rate on admission to the hospital exceeded 100, the patient died within 24 hours. The temperature was sometimes markedly subnormal. Pallor or an anxious appearance was often present. Abdominal pain and rigidity was almost constant. Vomiting was not usually present. The diagnosis was made by observing that after some hours the appearance, the abdominal condition, and the pulse of the patient did not improve; in many there was a decided change for the worse. SACHS.

**Chronic Appendicitis, Movable Cecum (Typhlospasm, Typhlatony, Typhlectasia)**—WILMS, *Archiv f. klin. Chirurgie*, Vol. VC, No. 3.

The following points are of value in the diagnosis of movable cecum: attacks of colic occurring in intervals, occasionally existence of enduring mild painful sensations, palpation of a regurgitating cecum becoming more resistant when contracting, and frequently increased pressure sensitiveness near McBurney's point. Röntgenography demonstrates stagnation of the bismuth mixture in the cecum. The cecum frequently extends down into the small pelvis and occupies the right side to the median line. The condition exists often in young individuals and especially in women in middle life. The attacks may concur with marked symptoms of collapse. Constipation plays an important rôle in the anamnesis. Occasionally constipation alternates with diarrhea of brief duration. MILL.

**Chronic Appendicitis and its Relation to Typhlatony, Movable Cecum and Similar Conditions**—P. KLEMM, *Archiv f. klin. Chirurgie*, Vol. VC, No. 3.

In a number of cases considered to be chronic appendicitis, appendectomy does not remove the difficulty. The disease in these

instances consists of an atony of the cecum resulting in coprostasis and colonic catarrh. Cecal atony is the consequence of inflammatory changes in the cecal serosa (typhlitis pañnosa) which occur in attacks and are caused by retardation of the discharge of the secretion from the appendix into the cecum. MILL.

**Syphilis of the Liver**—C. L. ESHLEMAN, *New Orleans Med. and Surg. Jour.*, Oct., 1911.

The clinical picture of hepatic syphilis is protean. A large, circumscribed gumma, with pulpy contents, may simulate an abscess, especially if there is fever. A number of smaller, but hard growths on the surface, with great enlargement of the liver, would strongly indicate cancer. The scarred botryoid liver also simulates cancer. The diffuse syphilitic cirrhosis, without palpable gummatous nodules, simulates either the hypertrophic cirrhosis of Hanot, or, if recurring ascites and other signs of partial obstruction are present, the condition is difficult to differentiate from the first stage of ordinary alcoholic cirrhosis when the liver is enlarged. Amyloid change in liver, spleen, kidneys and intestines may occur during the course of syphilis of the liver. Evidence of syphilis in other parts of the body is of decided diagnostic value. In differentiating from abscess, the leucocyte count and the manifestations of sepsis are to be considered. The cases of diffuse syphilitic cirrhosis with ascites are almost impossible to differentiate from ordinary alcoholic cirrhosis. WESTERN.

**Mesenteric Cysts**—G. C. NEY and A. L. WILKINSON, *Annals of Surg.*, July, 1911.

The most important signs of mesenteric cysts are the presence of a fluctuating abdominal tumor, usually located centrally, freely movable, and in the female not connected with the ovary; obstinate constipation increasing in intensity; severe abdominal pain relieved by defecation; a continual abdominal discomfort, and loss of weight. STEIN.

**Syphilis of the Anorectal Region**—L. H. ADLER, *N. Y. Med. Jour.*, Oct. 21, 1911.

Cases of primary and secondary syphilis are frequently found, showing no visible evidences of the disease, except at the anus, and in rare instances within the rectum. In order, therefore, to clear up any doubtful case, an inspection of the anorectal region should be made. WESTERN.

**Tuberculous Peritonitis in Children**—D. ROLLESTON, *Med. Times (London)*, Aug., 1911.

Tuberculous peritonitis is sometimes latent, and may only be discovered at an operation performed for a hernia, which latter is often the first evidence of tuberculosis of the peritoneum as the intestine is forced out by increased abdominal pressure due to ascites. The onset of tuberculous peritonitis is acute in about one-third of the cases and at first may strongly suggest appendicitis. Ascites in children is generally due to tuberculous peritonitis. Other conditions causing ascites in children, are late hereditary syphilis, obliteration of the hepatic veins (very rare), simple chronic inflammation of the peritoneum, malignant disease of the peritoneum, or the mesenteric glands. The more acute the onset, the worse the prognosis. The prognosis is better in ascitic and fibrous cases than in caseous and ulcerative cases.

SACHS.

**Pneumococcus Peritonitis**—F. ROHR, *Grenzgebiete d. Medizin u. Chirurgie*, Vol. XXIII, No. 4.

The diffused type is much more difficult to diagnose than the local type, particularly in the early stages. Sudden onset, vomiting, high temperature, severe abdominal pains and diarrhea are important symptoms. There is a notable absence of abdominal tenderness and rigidity. Blood cultures often show the presence of pneumococci. Agglutination of the patient's serum upon the pneumococci may be of value in the diagnosis.

STEIN.

**Cysts of the Spleen**—J. H. MUSSEY, JR., *Am. Jour. Med. Sci.*, Oct., 1911.

In a majority of cases of cysts of the spleen the symptoms are those of a slowly growing tumor in the left hypochondrium. As the tumor increases in size, pressure symptoms, or symptoms due to the mechanical weight of the mass, may develop. These are evidenced by digestive disturbances, flatulence, at times nausea and vomiting as the result of pressure on the stomach, and constipation, from pressure on the bowel. A sense of soreness may also be noted over the mass, while pain, from mechanical traction, referred toward the left axilla and shoulder, is also frequently in evidence. There is always present a sense of discomfort. Objective symptoms are those of any large mass. The site of occurrence, the fact that the tumor dulness is confluent with the splenic dulness, the direct connection frequently found with the spleen by palpation, and the moving of the mass with respiration, all point to the spleen as the site of the origin of the tumor. The cystic character of the tumor is readily recognized by the waves of fluctuation, easily elicited.

WESTERN.

**Subcutaneous Rupture of the Healthy and Diseased Spleen**—VORWERK,  
*Deutsche Zeitschr. f. Chirurgie*, Vol. CXI, Nos. 1 to 3.

Diagnosis is based on the following symptoms: Collapse with or without unconsciousness, anemia, sometimes vomiting, abdominal rigidity usually diffused rarely localized over the spleen, general abdominal tenderness, tympanitic percussion note when peritonitis sets in, and dulness in the flanks if there is much hemorrhage.

STEIN.

## NERVOUS SYSTEM

**External Malleolar Reflex (Chaddock's Sign)**—R. INGRAM, *Lancet-Clinic*,  
 Oct. 14, 1911.

Observations on 20 cases of various diseases of the nervous system in which the pyramidal tracts are involved. In all of these the Chaddock sign was elicited. Author confirms the contention of Chaddock that the malleolar sign is equal in value to the extensor plantar reflex (Babinski), that it is a more delicate test, appearing earlier and frequently lasting longer than the Babinski, and that it appears without the Babinski, whereas the Babinski does not occur without the Chaddock. (Chaddock's sign consists in irritating the outer side of the foot below the external malleolar process. The degree of irritation should be varied. In some cases the merest touch is sufficient to excite the sign; in others rather severe scratching may be required. A moderately pointed nail file is used for that purpose by the originator. Usually the most sensitive point is a slight depression just in front of the lower point of the external malleolus and behind the tuberosity of the cuboid, but sometimes the movement occurs more readily when the posterior groove is scratched.)

WESTERN.

**The Pupil and the Mechanism of its Reflexes in Health and Disease**—  
 J. H. WOODROFFE, *Dublin Jour. Med. Sci.*, Sept., 1911.

Irritative myosis is due to some process irritating those fibers or that part of the nucleus of the third nerve concerned in the movements of the pupil. It is distinguished by being unaffected by light or convergence, but it reacts to drugs of the myotic or mydriatic class. Among the causes of irritative myosis may be cited (1) the earlier stages of inflammatory conditions of the brain and of its meninges, (2) the earlier stages of tumors interfering with the third nerve or its nucleus, (3) a prolonged effort of accommodation. Myosis when of cerebral origin is due to irritation, and when of spinal origin is of the paralytic type, the converse holding good in

cases of mydriasis. Paralytic myosis may be distinguished by the fact that the pupil reacts both to light and with convergence—dilates but slightly on the application of a mydriatic, but contracts to pinpoint size when under the influence of a myotic drug. While caused by many lesions of the cervical spinal cord, it is sometimes found in tabes dorsalis as a very early sign. It indicates that the disease has proceeded no higher than the medulla. In general paralysis of the insane paralytic myosis is frequently seen at an early stage. Pressure on the cervical sympathetic by aneurysm, tumor, or other cause is an important factor in the production of paralytic myosis. Irritative mydriasis is the converse of paralytic myosis, and is due to stimulative processes in the cervical spine. Such a pupil reacts to light with convergence, and is readily dilated by mydriatics. It may be caused by an early inflammatory or sclerotic process in the upper part of the spinal cord, or anything causing stimulation of the cervical sympathetic. Paralytic mydriasis is the converse of irritative myosis. With the exception of some advanced intracranial lesions, paralytic mydriasis is most frequently due to purely ocular trouble, such as glaucoma, advanced retinitis, or optic neuritis. Such a pupil is obviously unaffected or nearly so by drugs of either the mydriatic or myotic group.

SACHS.

**Progressive Spinal Muscular Atrophy of Infants and Young Children—**

F. E. BATTEN, Brain (London), March, 1911.

A child who at the time of birth has a complete flaccid paralysis of all four extremities is probably the subject of a spinal hemorrhage, due to traumatism at first. The child who during the first few weeks or months of life develops a flaccid paralysis of all four extremities is probably the subject of a spinal atrophy. The forms of myopathy which occur in young children become year by year more generally recognized. Myotonia congenita is a disease of early childhood characterized by an extreme degree of loss of tone and feebleness in all the muscles of the body. This condition is stated to improve as the child advances in age. A child with this disease can, as a rule, perform all movements in a feeble manner, and there is not the marked degree of flaccid paralysis seen in the case of spinal atrophy. In spinal atrophy the paralysis is more marked and the hypotonia less marked than in cases of myotonia congenita.

SACHS.

**Experimental Poliomyelitis—M. NEUSTAEDTER and W. C. THRO, N. Y. Med. Jour., Sept. 23, 1911.**

Acute poliomyelitis is both infectious and contagious. It is propagated by the dust, and the nasopharynx must be the port of entry.

WESTERN.

**Edema of the Pia-Arachnoid**—C. K. STILLMAN, *Arch. Int. Medicine*, Aug., 1911.

The collection of fluid in the pia mater is not in itself a pathological process, produces per se no symptoms, but represents in every instance the reciprocal of brain shrinkage. Thickenings of the meninges in such cases take place chiefly in the arachnoid and are not to be regarded as representing a true inflammatory process. The appearance of "wet-brain" so called, or pial edema of alcoholics, is due to brain shrinkage and has no pathological significance per se. The appearances of pia-arachnoidal effusion are readily mistaken for those of serous meningitis. When a collection of fluid is present in the pia arachnoid, a diagnosis of edema of the brain is open to question and can be made only on the assumption that the brain has been previously in a more shrunken condition.

WESTERN.

**Laboratory Diagnosis of General Paresis**—J. V. MAY, *Arch. Int. Medicine*, Aug., 1911.

There is an increase in the protein content of the cerebrospinal fluid in general paresis. There is a marked increase in the globulin content in general paresis. There is an increase in the globulin content in psychoses other than general paresis in many cases. The increase in the globulin content can be shown better by using larger quantities of the reagents suggested by Noguchi for his butyric acid test, preserving, however, the same proportions. This method will show an increase which would often be overlooked otherwise. The butyric acid test of Noguchi has not been accepted as absolutely diagnostic of general paresis. In the performance of the Noguchi modification of the Wassermann reaction it is important to use a sufficient quantity of the serum to be tested, the capillary drop recommended by Noguchi being a very variable amount. The Noguchi method of interpreting the results of the Wassermann test differs largely from that of many other laboratory workers and may lead to various conclusions, depending on the observer. The original Wassermann method is to be preferred to the Noguchi modification. The Noguchi method of using antigen and amboceptor in the paper form can be adapted to the original Wassermann reaction with advantage.

WESTERN.

#### URINARY ORGANS—MALE GENITALIA

**Intra-Peritoneal Rupture of the Urinary Bladder**—P. HERZEN, *Arch. f. klin. Chirurgie*, Aug., 1911.

The diagnosis is made from the history, pain and tenderness supra-pubically and over the whole abdomen, retention of urine,

absence of dulness of the normally distended bladder and the presence of fluid free in the abdomen ascertained by percussion; passage of blood from the urethra, and no urine obtained through the catheter. If more than a liter of urine is obtained from the bladder it shows that the rupture in the bladder communicates with the abdominal cavity. Another sign of bladder rupture is the following: the patient is catheterized when lying down; he then rises, lies down again and is catheterized. If urine is again obtained it indicates bladder rupture.

STEIN.

**Urinary Bladder Disturbances due to Inflammatory Changes in the Prostate and Seminal Vesicles**—I. S. KOLL, Surg., Gyn. and Obstetrics, Sept., 1911.

Author concludes that the anatomic relation of the prostate and seminal vesicles to the base of the bladder explains how any pathological change in either of the former can produce symptoms in the latter. It may be impossible to derive any diagnosis without urethroscopic or cystoscopic examination. Differentiation must be made between true hypertrophy of the prostate and chronic inflammation of the gland.

STEIN.

**Topography of the Ureter as determined by the Shadowgraph Catheter**—L. E. SCHMIDT and H. L. KRETSCHMER, Sur., Gyn. and Obstetrics, Sept., 1911.

The conclusions drawn by authors are: When judging a skiagraph it is impossible to state positively whether or not a given shadow is in the course of the ureter unless the X-ray picture is taken with a shadowgraph catheter in the ureter. Examination with the fuse wire catheter is superior to other methods for determining the topography of the ureter throughout its entire course.

STEIN.

**Bacillus Coli Infection of the Urinary Tract**—R. M. RAWLS, Med. Rec., Oct. 7, 1911.

The ordinary routine urinary examination is insufficient for the recognition of bacillus coli infection of the urinary tract. The urine should be obtained under the most rigid precautions to prevent contamination, and the microscopical examination, as well as the culture, should be made from the centrifugated sediment. One negative examination does not exclude the possibility of colon infection, as the specimen may have been obtained when the diseased kidney was secreting very little, if any, urine. At such a time the healthy kidney would be over-functionating, and the result would be a urine with very few, if any, pathological elements. A ureteral catheteriza-



tion would obviate this difficulty, but in acute cases one is seldom justified in resorting to instrumentation. Blood examinations are of doubtful significance, as we have records of so few cases. In all forms of colon bacillus infection of the urinary tract there is a tendency to spontaneous recovery, but in only about half does the bacillus disappear from the urine, the other pass a visible amount of pus for an indefinite time. In pyelitis of pregnancy there is a very low mortality and recovery usually takes place when the uterus is emptied. In abscess of the kidney the mortality is highest, but even in this condition we may have spontaneous recovery. In all acute cases there is the tendency for them to become chronic with acute exacerbations. Many individuals with a persistent albuminuria, with or without inflammatory elements in their urine, are suffering from chronic colon bacillus infection.

WESTERN.

**Infection of the Urinary Tract by the *Bacillus Lactis Aerogenes*—J. A. LUETSCHER, Johns Hopkins Hospital Bull., Oct., 1911.**

The bacillus lactis aerogenes is a rare cause of cystitis. The great majority of infections are due indirectly to the introduction of instruments. Infections of the bladder, in cases where no instruments have been introduced, are very frequent in women and rare in men. In infections of the bladder in women, without a history of the introduction of instruments, the route of infection is usually an ascending one and due to the direct invasion of the bacteria from the urethra. Such direct invasion of the bladder also occurs in the male, and probably much more frequently than is usually supposed. The introduction of a catheter or instruments into the bladder is a very serious procedure, since it may produce a pyuria if the local conditions are favorable, or a bacteriuria which later may be converted into a pyuria when the local conditions become favorable.

WESTERN.

**Quantitative Determination of Functional Renal Sufficiency by the Doboscq Colorimeter; Indigocarmin versus Phenolsulphonaphthalein—B. A. THOMAS, Am. Jour. Med. Sci., Sept., 1911.**

Quantitative colorimetric determinations of indigocarmin and phenolsulphonaphthalein are of very great value in the estimation of the total renal function, particularly in such conditions as nephritis and damaged kidneys, incident to prostatic enlargement, etc., causing poor drainage and resulting in vis a tergo pressure. These substances routinely employed by the surgeon as indicators for or against surgical intervention, particularly in contemplated prostatectomies, but likewise in other fields of surgery, will aid materially in the reduction of operative mortality. Although each substance has

its particular advantages and indications as a test, indigocarmin, at least for the purposes of the surgeon, especially in the diagnosis and prognosis of unilateral renal disease, seems just as useful and possibly more practical than the new drug phenolsulphonephthalein. The later in many respects is an ideal substance for employment in studying the pathology and physiology of the kidney. It may possibly be more sensitive than indigocarmin, in fact, may prove to be too delicate. On the other hand, the technic of the test is extremely simple and may be employed painlessly. Preference should be extended to this drug over indigocarmin whenever it is desirable to learn the total or combined efficiency of both kidneys.

WESTERN.

**Diagnosis of Calculi in the Kidney and Ureter by Means of the X-Rays—**

G. A. PIRIE, *Edinburgh Med. Jour.*, Sept., 1911.

The value of an X-ray examination for calculi in the kidney and ureter depends greatly on the observance of three rules: (1) the patient's bowels must be well cleaned out; (2) the X-ray tube must be of the right degree of hardness; (3) if a radiogram is taken, the respiratory movements must be stopped during the exposure of the plate. The reason for these rules is evident. If the bowels are loaded there will certainly be vague shadows to obscure stones or even to be mistaken for them. If the X-ray tube is too soft, the X-ray will not penetrate the abdomen, and if too hard it will pass through the calculus without casting much shadow. If a photograph is taken during respiration the shadows are very apt to move and cause a vague streak on the plate.

SACHS.

**Early Diagnosis of Paranephritic Suppuration and Renal Abscess—**

BAUM, *Zentralblatt f. Chirurgie*, 1911, Nos. 28 to 30.

Author draws attention to the occurrence of bacteria in the urine—mostly staphylococcus aureus—in suppurations in and of the kidney. Out of 7 cases the bacteria were found in 6 cases. The urinary changes as revealed by the microscope are often but very insignificant; rather numerous leucocytes, some erythrocytes and a few casts may be distinguished.

STEIN.

**Excretion of Nitrogen and Sodium Chlorid through the Skin of Nephropaths—**

F. O. A. LOOFS, *Deutsches Archiv f. klin. Medizin*, Vol. CIII, Nos. 5 and 6.

Patients affected with chronic kidney disease, especially patients without edema, also individuals with contracted kidneys and uremic phenomena, do not excrete more nitrogen and sodium chlorid through the skin than is eliminated by healthy persons under similar conditions.

WESTERN.

**Renal Adenomata**—H. MORRIS, Practitioner (London), July, 1911.

Adenomata form a large class of renal growths. They may be single or multiple; small or large; solid or cystic; papillary or alveolar. They are encapsulated growths. Some of the renal adenomata, though of slow growth, of long duration, and microscopically of simple structure, take on a malignant course. This is especially so with cystic adenomata. The earliest and most prominent symptom in a case of papillomatous adenoma was hematuria. The first and throughout the only marked symptom in a case of tubular adenoma was the presence of a tumor. SACHS.

**Similarity of the Signs of Hematocele and Early Malignant Disease of the Testicle**—H. F. WOOLFENDEN, Medical Press (London), Aug. 23, 1911.

The resemblance between early malignant disease of the testicle and old hematoceles may be so close as to defy diagnosis. A large tumor may be present in which the details of the testicle may become obliterated. The tumor may give an indefinite sense of fluctuation, the cord may be only slightly thickened or normal. There may be an absence of translucency, and a history of injury may be obtained. In the later stages of malignant disease the markedly infiltrated cord and enlarged lumbar glands make the diagnosis obvious. SACHS.

## FEMALE ORGANS OF GENERATION—PREGNANCY— PARTURITION—INFANTS

**Diagnosis of Contracted Pelves**—J. M. M. KERR, Surg., Gyn. and Obstetrics, July, 1911.

Author believes that the head of the fetus is the best pelvimeter to gauge the size of the maternal pelvis. The patient is given an anesthetic. The accoucheur seizes the fetal head with one hand on the abdomen and presses the head into the pelvis. With two fingers of the other hand in the vagina he feels how the head engages and estimates the degree of overlapping. STEIN.

**Expulsion of Placenta before the Birth of the Child**—W. D. MACFARLAND, Jour. Obst. and Gynecology of British Empire, Aug., 1911.

Spontaneous expulsion of the placenta before the birth of the child is rare. Author records 3 cases in which a placenta previa existed. It is not unusual to have the placenta crescentic in shape when situated near the os internum. Hydramnios existed in 2 cases and a history of endometrial involvement in all the cases. Hemorrhage did not occur either after or before the expulsion of the placenta. SACHS.

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